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CARD

International harvester company

Farm implements.

v. 2

I H C
ALMANAC
AND ENCYCLOPEDIA

INTERNATIONAL HARVESTER COMPANY OF AMERICA
(INCORPORATED)
CHICAGO U S A

I've scanned the world from east to west.
To learn what systems pay the best.
Why some crops yield in large amount,
And how to start a bank account.
What I have gleaned is written here
To help you in your work this year.
Read what we've learned, and then begin
With I H C to work and win.

Prosperity
"Prospy" for short

THE IHC SERVICE BUREAU

We have established a free Bureau of real, practical everyday service for the good of everybody, everywhere, interested in the farm and its many-sided problems. The object is improved farm methods and larger and better crops.

Farmers, dairymen, fruitmen, stockmen, teachers, students, editors, and others are invited to make free use of the Bureau.

When you want to know, write the I H C Service Bureau of the International Harvester Company of America, Harvester Building, Chicago. Experts are employed to answer questions pertaining to soils, soil fertility, seeds, rotation of crops, climatic conditions, irrigation, insect pests, spraying, the feeding and housing of cattle, diseases of animals, care and use of farm machines, planting and cultivation of specialties, marketing — in short, anything the man on the farm wants to know the Bureau will try to tell him.

Old farm problems are constantly presenting new angles, and new problems are appearing all the while. Whenever, wherever, and whatever the problem, be it new or old, write out the facts and send them to the Bureau. If the problem is an old one, the most accurate existing information will be sent the person making the inquiry. If the problem is new, the wheels of investigation will be set in motion, and as soon as a solution is obtained the results will be given not only to the man who brought the problem to attention but to the press of the country.

While the Bureau cooperates with the United States Department of Agriculture, the Government Experiment Stations, and the State Agricultural Colleges, and constantly draws from the knowledge and experiments of the world's experts, yet much of the most valuable information comes out of the experiences of the men in the field. This being true, we beg the cooperation of farmers, dairymen, fruitmen, and stockmen, and solicit their experiences as well as the problems facing them.

Professor J. E. Waggoner is at present chief agricultural advisor. He was a farmer before he was a student, and he has remained both farmer and student since his graduation from Iowa State College of Agriculture

and Mechanic Arts, at Ames, and so he mixes well the practical and the theoretical. Previous to assuming his present position Professor Waggoner was professor of agricultural engineering in Mississippi Agricultural and Mechanical College.

Aside from the individual and general exchange of experiences and solution of problems, the Bureau is conducting a popular educational campaign. One of the most interesting features of this campaign is "The Romance of the Reaper," an entertainment illustrated with beautifully colored views and motion pictures. This we offer free to large gatherings where there are farmers and others interested, such as fairs, land and corn shows, agricultural colleges, institutes, conventions, etc.

Lantern slides illustrating agricultural progress are loaned by the Bureau to schools, colleges, and other institutions.

We have also placed the Bureau at the service of editors, teachers, and speakers who need data on agricultural topics for the preparation of articles, essays, and addresses. On request we prepare special articles for the press, and photographs of every kind of farm scene are loaned.

This is an age of want-to-know, and the more the man on the farm knows, the less hard work he does and the more money he makes. Agriculture has passed from drudgery to a scientific profession — the most important science in the universe. To cultivate more acres and make those acres yield larger and better crops, to produce more milk and butter and eggs, to raise more cattle, and to grow more fruit — to better feed and nourish the millions — is the most honorable as well as the most profitable business in the world. Or it will be the most profitable when those who till, and produce, and raise, and grow, more fully know the whys and hows of tilling, and producing, and raising, and growing.

The Bureau is a center for the collection and distribution of information — a home for everyone interested in agriculture — a place where difficulties are made easy and gloom is turned into cheer.

The International Harvester Company of America invites those interested in the soil and its products to use the I H C Service Bureau as though it were their own. In truth it is their own, and, like the arm that is exercised, the more it is used the stronger it becomes.

This almanac and encyclopedia has been compiled for the purpose of giving the farmer a ready reference guide containing such data as is usually found in an almanac, together with many tables to which there may be occasion to refer from time to time.

The articles on vital agricultural subjects have been prepared by well-known authorities, and their perusal should prove profitable to every farmer.

INDEX

FARMERS' ALMANAC AND ENCYCLOPEDIA FOR 1911

I H C ALMANAC AND ENCYCLOPEDIA
FOR 1911

Astronomical Calculations

By BERLIN H. WRIGHT, De Land, Florida

Eras of Time

The Gregorian year 1911 corresponds to the following eras:

From July 4th the 136th year of the Independence of the United States.

The year 1329 (nearly) of the Mohammedan era of the Hegira, beginning January 2: the year 1330 begins Dec. 22.

The year 8020 of the Greek Church, beginning January 14.

The year 4608 (nearly) of the Chinese era, beginning January 30.

The year 5671-72 (nearly) of the Jewish era, year 5672 beginning at sunset September 22.

The year 2571 (nearly) of the Japanese era, beginning January 30

The year 6624 of the Julian period.

The year 2223 of the Grecian era.

January 1, 1911, is the 2,419,038th day since the commencement of the Julian period.

Chronological Cycles

Dominical Letter	A	Solar Cycle	16
Epact (Moon's Age, Jan. 1)	30	Roman Indiction	9
Lunar Cycle, or Golden number	12	Julian Period	6624
Dionnysian Period	240	Jewish Lunar Cycle	9

Explanation of the Calendar Pages

All the calculations are based upon mean or clock time, except the Moon's Phases, which are of that standard within which zone the provinces named are located. The Sun's rising and setting are for the upper limb, corrected for parallax and refraction. In the case of the Moon no correction is needed, as in the Sun, for "parallax and refraction," with her are of opposite nature and just balance each other. The figures given, therefore, are for the Moon's center on a true horizon, such as the ocean or a large plain affords.

The calculations in each of the geographical divisions of each calendar page will apply with sufficient accuracy to all places in the contiguous North American zones indicated by the headings of the divisions.

Although the 24-hour system of reckoning is used on some of the Canadian railways in order to reduce the chance of error in running trains, it has not been generally adopted.

Explanation of Standard Time Chart

The heavy dotted lines show the **arbitrary** divisions of time in the United States. The plus and minus marks on either side of the meridian lines show whether it is necessary to add to or subtract from the mean time of points east or west of these lines, to arrive at actual standard time. Examples. New York City is 1° east of the 5th meridian, therefore New York local time, less 4 m. gives standard time, and for Boston standard (eastern) time 16 m. must be subtracted from mean time.

Explanation of Signs on Calendar Pages

The signs used are as follows; ☌, conjunction or near approach; ☍, opposition or 180° from the Sun; □, quadrature or 90° from the Sun; ☉, Sun; ⊕, Earth; ☿, Mercury; ♀, Venus; ♂, Mars; ♃, Jupiter; ♄, Saturn; ♅, Uranus; ♆, Neptune; ☊, Ascending Node; ☋, Descending Node; ☽, Moon generally.

Weather Calendar Explanation: All storms are progressive, i. e., the **entire** storm area moves. This motion is in a general Easterly direction except in the tropical storms, which generally pass Northward along the Atlantic Seabord. Hence by keeping this in mind and the following facts, in connection with the "Weather Calendar," every one may become a good local "Weather Prophet."

The wind always blows in a circle around a storm center, in a direction contrary to the hands of a clock, and generally **towards** the storm center. Hence, when it blows from the N. the heaviest rain is E. of you; if from the S. the heaviest rain is W. of you; if from the E. the heaviest rain is S. of you.

Every one should own a barometer and have a wind vane; a careful observation of the behavior of these will enable one to obtain a foreknowledge of local conditions when studied in connection with the general storm periods on each calendar page and the above directions.

These "Storm Periods" are the times when the conditions are such as to warrant the forecast. But, as previously stated, very opposite conditions always obtain in opposite portions of the storm area. Thus while a violent thunder storm is prevailing in the S. W. quadrant of a storm area, cold N. E. rains will be falling in the opposite quadrant. A storm area will pass from the Rocky Mountains to the Atlantic in from 3 to 5 days.

The forecasts in the right hand column of the calendar pages are based on sound astro-physical principles and long observation.

For "long range" forecasts they will compare favorably with 24 or 36 hour forecasts, and will be considered as being fulfilled when compared with official observations covering the period for which they are made under the following conditions, viz.: If it storms within 12 hours before or after the date given for storm. For warm and cold periods allow five days, as they may occasionally overlap. Storm periods cover three days.

It must not be understood that "Storm Period" means that storms are expected to prevail at all places within the range of the district covered by the almanac at one time, as all storms are progressive. That is, they move in an easterly direction if they originate in the West, and in a northerly direction if their birthplace is in the South. The periods so marked are simply the times within which severe storms are most likely to occur. The storms also may vary greatly in character, according to location with respect to the storm center, or they may be chiefly electrical or of wind alone.

The Zodiacal Signs are here given, with the period during which they are in control according to Astrologists.

January 20 to February 19, ♒, Aquarius, the Water Bearer.
February 19 to March 21, ♓, Pisces, the Fishes
March 21 to April 21, ♈, Aries, the Ram.
April 21 to May 22, ♉, Taurus, the Bull.
May 22 to June 22, ♊, Gemini, the Twins
June 22 to July 23, ♋, Cancer, the Crab.
July 23 to August 23, ♌, Leo, the Lion.
August 23 to September 23, ♍, Virgo, the Virgin.
September 24 to October 24, ♎, Libra, the Scales.
October 24 to November 23, ♏, Scorpio, the Scorpion.
November 23 to December 22, ♐, Sagittarius, the Archer.
December 22 to January 20, ♑, Capricorn, the Sea Goat.

The Signs and Constellations of the Zodiac

Until recently we supposed that the present relationship between the signs and constellations of the zodiac was generally understood, as all astronomical text-books mention their disagreement and explain the cause. The numerous letters of inquiry concerning differences between this data in this almanac and certain others show the necessity for this note of explanation.

Thousands of years ago when the zodiac, that belt of the heavens about 16° in width within which move the moon and planets, was formed and divided into twelve parts or seasons called signs, each containing certain star groups called constellations. Each was given a name of an object or animal which never did bear any relationship to the configuration of the stars in that group or division, but which did or is supposed to have reference to certain astronomical or other facts. Thus Libra, ♎ the scales or balance comes at the autumnal equinox when there is an equilibrium or balance between the length of day and night the world over. Aquarius, ♒, the water bearer, and whose sign is the Egyptian sign for running water, comes at the season of greatest rains in Egypt, etc.

Since the time when these divisions were made and named, owing to the precession of the equinoxes, resulting from the differing polar and equatorial diameters of the earth, the signs have moved back west nearly a whole division or constellation and where ♈ was the first, ♓ now is. Hence though the sun now enters the sign ♈ March 20, it is a month later when he enters the constellation ♈. It must be apparent, therefore, that any supposed influence or relationship which early astrologers attributed to the position of the sun, moon or planets when in certain of these divisions can no longer exist, as the sign now only represents that space or division of the zodiac where the controlling constellation was 2,000 or more years ago but is not now. Nevertheless some almanacs still give the signs for the moon's place, which is very misleading to those who attempt to follow her in her course among the stars. Hence this almanac gives the constellation and discards the ancient picture of the disemboweled man as relics of the age of superstition. The sign is retained for sun's place in the seasons and sun's path each month because of its relationship to the equinoxes and solstices. Inquiries will receive attention when stamped and self-directed envelopes are inclosed.

BERLIN H. WRIGHT, DE LAND, FLA.

Fixed and Movable Feasts, or Church Days

New Years' Day (Circumcision)	Jan	1
Conversion of St. Paul	"	25
Purification B. V. M.	Feb.	2
Septuagesima Sunday	"	12
St. Valentine	"	14
Sexagesima Sunday	"	19
Quinquagesima Sunday	"	26
Shrove Tuesday	"	28
Ash Wednesday (Lent begins)	Mar.	1
Quadragesima Sunday	"	5
St. Patrick's Day	"	17
Annunciation (Lady Day)	"	25
Mid Lent Sunday	"	26
Palm Sunday	Apr.	9
Good Friday	"	14
Easter Sunday	"	16
Low Sunday (St. George)	"	23
St. Mark	"	25
Philip and James	May	1
Rogation Sunday	"	21
Ascension (Holy) Thursday	"	25
Whit Sunday (Pentecost)	June	4
Trinity Sunday	"	11
Corpus Christi	"	15
Nativity John the Baptist	"	24
Peter and Paul	June	29
Mary Magdalen	July	22
St. James	"	25
Transfiguration	Aug.	6
St. Bartholomew	"	24
Exalt. Holy Cross	Sept.	14
St. Matthew	"	21
Michaelmas	"	29
St. Luke	Oct.	18
Simon and Jude	"	28
Hallowe'en	"	31
All Saints	Nov.	1
Thanksgiving	"	30
St. Andrew	"	30
Advent Sunday	Dec.	3
St. Thomas	"	21
Christmas Day	"	25
St. Stephen	"	26
St. John the Evangelist	"	27
Holy Innocents	"	28

EMBER DAYS.

Wednesday, Friday and Saturday.
Mar. 8, 10 and 11. Sept. 20, 22 and 23.
June 7, 9 and 10. Dec. 20, 22 and 23.

Planets Brightest or Best Seen

Mercury (☿), Feb. 1-5 and Sept 23-30, as a morning star, rising 1 hour 15 minutes before the sun; also April 1-10 and Dec 4-10, as an evening star, setting 1 hour 15 minutes after the sun. **Venus** (♀), Aug 8-12 as an evening star, and Oct. 21-25 as a morning star. **Mars** (♂), Nov. 24-25, all night. **Jupiter** (♃), April 30, all night. **Saturn** (♄), Nov. 9, all night. **Uranus** (♅ or ♅), July 20, all night. **Neptune** (♆), Jan. 11, all night.

Morning Stars (West of Sun)

MERCURY — see "Planets Brightest."
VENUS, until Sept. 14.
MARS, until Aug. 8.
JUPITER, until Feb. 3 and after Nov. 18.
SATURN, from May 1 to Aug. 13.

Evening Stars (East of Sun)

MERCURY — see "Planets Brightest."
VENUS, after Sept. 14.
MARS, after Aug. 8.
JUPITER, from Feb. 3 to Nov. 18.
SATURN, until May 1 and after Aug. 13.

Situation of the Planets for the Sundays: also Moon's Position for the Year

EXPLANATION OF SIGNS.— ♈ Aries. ♉ Taurus. ♊ Gemini. ♋ Cancer. ♌ Leo. ♍ Virgo. ♎ Libra. ♏ Scorpio. ♐ Sagittarius. ♑ Capricornus. ♒ Aquarius. ♓ Pisces. The place indicated for the planets is for the 1st, 2d, 3d, 4th and 5th Sundays of each month, in the order of the planets.

PLANET	Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
	D. Cn.	D. Cn.	D. Con.	D. Cn.	D. Cn.	D. Cn.	D. Con.	D. Cn.	D. Cn.	D. Cn.	D. Cn	D. Con.
Venus (♀)..	1 ♐	5 ♑	5 ♓	2 ♈	7 ♉	4 ♊	2 ♋	6 ♌	3 ♌	1 ♌	5 ♌	3 ♍
Mars (♂)..	8 ♍	12 ♐	12 ♐	9 ♑	14 ♒	11 ♓	9 ♓	13 ♈	10 ♉	8 ♉	12 ♉	10 ♈
Jupiter (♃)	15 ♎	19 ♎	19 ♎	16 ♎	21 ♎	18 ♎	16 ♎	20 ♎	17 ♎	15 ♎	19 ♎	17 ♏
Saturn (♄)..	29 ♈	26 ♈	25 ♈	23 ♈	28 ♈	25 ♈	23 ♈	27 ♈	24 ♈	22 ♈	26 ♈	24 ♈
Uranus (♅).	.....	.....	.....	30 ♐	.....	.....	30 ♐	.....	.....	29 ♐	.....	31 ♐
☽ Perigee	12	9	6	2-30	28	25	24	21	17	11	8	6
☽ Apogee	24	21	21	18	15	11	8	5	2-29	27	24	21
☽ Highest (☊)	13	9	8	5	2-29	26	22	19	18	12	9	6†
☽ Lowest (☋)	26	23	22	18	16	12*	9	6	5	27	23	21
☽ at ♂	23	19	18	15	12	8	5	1-28	25	22	18	15
☽ at ☊	10	6	5	1-29	26	22	20	16	12	9	5	3-30
☾ On Equator..	6-19	3-16	3-15-30	12-26	9-23	5-20	3-17-30	13-26	9-23	6-19	3-16	1-13-28

* Moon lowest of the Year. † Moon highest of the Year. See Note of Explanation in 1910 edition.

The Seasons and the Sun's Apparent Path through the Zodiac

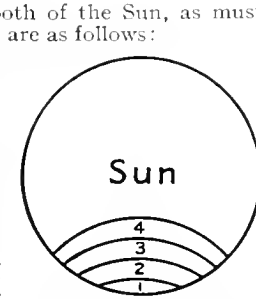
Sun Enters Sign		Constellation	(Mean Local Time)							D.	H.	M.
♑	=	♐	Dec.	22	11	56	a. m.,	1910.	Winter begins and lasts	89	0	42
♒	=	♑	Jan.	20	8	27	a. m.,	1911.	South of Equator.			
♓	=	♒	Feb.	19	1	4	a. m.,	1911.				
♈	=	♓	Mar.	21	0	38	p. m.,	1911.	Spring begins and lasts	92	19	42
♉	=	♈	Apr.	21	0	20	a. m.,	1911.	North of Equator.			
♊	=	♉	May	21	9	4	a. m.,	1911.				
♋	=	♊	June	22	8	20	a. m.,	1911.	Summer begins and	93	14	42
♌	=	♋	July	23	7	12	p. m.,	1911.	lasts, north of Equator.			
♍	=	♌	Aug.	24	2	22	a. m.,	1911.				
♎	=	♍	Sept.	23	11	2	p. m.,	1911.	Autumn begins and	89	18	35
♏	=	♎	Oct.	24	7	38	a. m.,	1911.	lasts, south of Equator.			
♐	=	♏	Nov.	23	4	40	a. m.,	1911.				
♑	=	♐	Dec.	22	5	37	p. m.,	1911.	Winter begins, tropical	365	5	41
D.	H.	M.					D.	H. M.	year.			
89	0	42					92	19 42				
89	18	35					93	14 42				
178	19	17	South of the Equator.				189	10 24	North of the Equator.			
						Subtract	178	19 17				
							7	15 7	longer north of Equator than south			

of it, owing to the slower motion of the Earth (Sun's apparent motion) at and near Aphelion.

Eclipses During 1911

There will be two eclipses this year and both of the Sun, as must always be the case when only two occur. They are as follows:

I. Total, April 28, partially visible in the United States as a small partial eclipse on the Sun's southern limb. The Sun will set more or less eclipsed east of a line from near Pittsburg, Pa., to Matagorda Bay, Texas. Washington, D. C., is on the northern Atlantic boundary of the area of visibility. No part of the eclipse will be visible north of a line from Portland, Ore., through Milwaukee and Pittsburg to Washington, D. C. Therefore the eclipse will be very small in the western and middle states west of the above mentioned line from Pittsburg to Matagorda Bay, being largest in the extreme Southwest. More exactly visible as follows:



The figure shows 1, 2, 3 and 4 digits cut off from the sun's southern limb.

	Begins H. M.	Ends H. M.	Size Digits	Correction for Standard Time
Chicago	6:10 p. m.	6:15 p. m.	0.5	− 10m. Central
Washington	Contact of limbs	at sunset		
Charleston, S. C.	6:14 p. m.	☉ sets eclipsed	2.0 I at sunset	− 20m. Eastern
St. Louis, Mo.	5:43 "	6:23 p. m.	1.5	+ 1m. Central
St. Paul	Contact of limbs	at sunset.		
Minneapolis				
New Orleans	5:22 p. m.	☉ sets eclipsed	2.0 D at sunset	− 0 Central
San Diego	3:11 "	4:46 p. m.	4.0	− 11m. Pacific
San Francisco	2:52 "	4:15 "	3.0	+ 10m. "
Los Angeles	3:08 "	4:20 "	3.0	− 0m. "
Birmingham	5:39 "	☉ sets eclipsed	2.8 D at sunset	− 13m. Central
Raleigh	6:23 "	" " "	1.3 I " "	+ 15m. Eastern
Jacksonville	6:06 "	" " "	3.0 I " "	− 33m. Central
Little Rock	5:34 "	At sunset	3.0	+ 0m. "
Jackson, Miss.	5:27 "	☉ sets eclipsed	2.0	+ 1m. "
Chattanooga	5:52 "	" " "	1.7 D at sunset	− 19m. "
Savannah	6:07 "	" " "	3.0 I " "	− 36m. "
Louisville	5:56 "	" " "	0.9 D " "	− 18m. "
Richmond, Va.	Contact of limbs	at sunset.		

I Indicate that the eclipse will be increasing at sunset.
D Indicates that the eclipse will be decreasing at sunset.

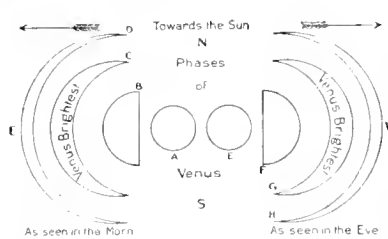
II. Annular, Oct. 22. Invisible on the Western Continent. Visible in the southwestern Pacific and Asia. The path of the Annular phase passes through New Guinea, southern Philippines and southern China to the sea of Aral.

The Planets

MERCURY (☿) will be brightest: (a) As an EVENING STAR, April 1-10 and Dec. 4-10, setting about 1 h. 15 m. after the Sun, being at greatest angular distance east of the Sun April 14 (19°) and Dec. 7 (21°). At the April date he will be in ♓ directly south of α Alpha Arietis and the line of stars in the horn of the Ram, and in December in ♐ near the end of the handle of the Milk-maid's Dipper. On April 10 ♄ will be 4° south of ☿ and on September 24 ☿ will be 6° north of ♃. (b) As a MORNING STAR. February 1-5 and September 23-30, rising about 1 h. 15 m. before the Sun, being at greatest angular distance west of the Sun February 2 (25°) and September 25 (18°). When brightest in February the Milkmaid's Dipper in ♐ will be about 10° west of him, and in September the Sickle in ♌ will be about 15° west of him. The absence of the Moon on the February and September periods will render those dates still more favorable.

VENUS (♀), the "Queen of Beauty," and whose sign is a looking glass, will be a most attractive celestial object nearly all of the year. Twice she will be at her very brightest; first, August 8–12 as an EVENING STAR, and again after passing between the Earth and Sun (inferior conjunction) as a MORNING STAR, October 21–25. See Table of the Planets and Chart of Visibility of the Planets. Venus not only attains a greater degree of brilliancy than any of the other planets, but at such times, and for about a month before and after, she will show a large crescent phase like the Moon between new and the quarters. At the October date she will shine with unusual splendor in the absence of the Moon, and will cast a distinct shadow.

Explanation: A. Fifteen days before superior conjunction or June 18, 1912.
B.—At greatest elongation West Nov. 20, 1911.
C.—When brightest as a morning star—Oct. 21-25, 1911
D.—Just after inferior conjunction or Sept. 20, 1911.
E.—Fifteen days after superior conjunction July 18, 1912.
F.—At greatest elongation East—July 7, 1911.
G.—When brightest as an evening star, Aug. 8-12, 1911.
H.—Just before inferior conjunction, Sept. 10, 1911.



At the beginning of the year ♀ will be found 5° N. of Milkmaid's Dipper in ♐; January 11 just S. of the brightest star in ♑ and on the boundary between ♐ and ♑: ☌ ☽ February 1, ♀ 3° 37′ N.; February 8 in ♒ 10° S. of the ♄ on the equator of the heavens; February 26 on the prime meridian of the heavens 15° S. of the square of Pegasus; ☌ ☽ March 2, ♄ 2° 20′ N.; enters ♓ March 26–29; April 1, ☌ ☽, ♀ 14′ N. and occulted; April 15, 5° S. of the Pleiades; April 26, 7° N. of Aldebaran, the lucida of the Hyades; May 1, ☌ ☽, ♀ 1° 29′ S.; May 7 in eastern ♉ and due N. of Orion's Belt 24°; May 15 in line northward with the bright stars in the feet of the twins (♊) with the brightest star of the heavens (Sirius) due S. of her about 40°. Note that an immense diamond is formed by Venus on the N., Sirius on the S., Betelguese on the W. and Procyon on the E.—a most striking figure in the evening skies west of the meridian; May 29–30, between Castor and Pollux in ♊ on the N. and Procyon on the S., but nearest the former, and 3° N.

of ♆; June 12–13 in ☽ on northern edge of the group of dim stars called Praesepe; June 29, ☌ ☽, + 3° 40′ —; July 5–6 less than 1° N. of Regulus in the end of the handle of the Sickle; brightest August 8–12, when about 15° E. of Regulus, near the middle of ♌, where she soon becomes stationary, with respect to the stars, and then begins to move back westward, or retrogrades. She may be seen in the day time, in July and August; becomes invisible early in September, being at inferior conjunction September 15. When next seen she will appear in the east in the morning, west of the Sun; ☌ ☿, September 24, being 10° S. of ☿; stationary again early in October in eastern ♍; occulted by ☽ November 16; advances past the stars of ♏, passing about 4° N. of Spica the last of November, and through the square of ♎ the last of December.

Mars (♂) will be brightest as an Evening Star November 24–25, being a Morning Star until August 8, and afterward an Evening Star to the end of the year. At the beginning of the year he will be in ♏, low in the east at dawn and about 5° N. of Antares; ☌ ☽ January 26; February 1, 3° N. of the Milkmaid's Dipper in ♐; ☌ ☽ February 24, ☌ ♆ March 11; March 15, in ♑ about 5° S. of the bright stars in the head of the goat; ☌ ☽ March 25; last of April in ♒ 10° S. of the ♅, ☌ ☾ April 23 and May 22; June 1 on first meridian of the heavens; ☌ ☽, ♂ 12′ N. 20th. On the 15th of July he will be about 10° S. of the bright stars in ♈; August 8 at western □ and ☌ ♄ August 16; last of August 8° S. of Pleiades; last of September close to and N. of the Hyades. Stationary middle of October in ♉; retrogrades very slowly back to the Pleiades December 1, being at ♇ November 26, when he will rise at sunset, pass the meridian at midnight and set at sunrise.

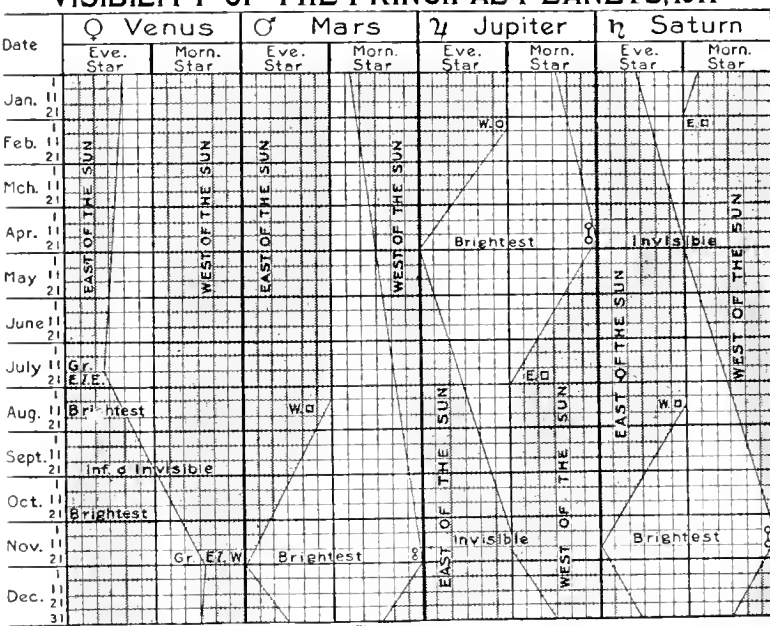
Jupiter (♃) will be at ♇ April 30, when he will be brightest and an evening and all-night star. Inasmuch as ♃ requires 12 of our years in which to make a revolution about the Sun and pass all the stars of the Zodiac, his movements from time to time will be very slight as compared with the planets whose orbits are interior to his, as he traverses only one sign in a year. He is still in ♎, and during the first days of February he will be very close (1° N.) to the brightest star in that constellation – Alpha Librae, situated on the Ecliptic and being the S. W. star of the Square of Libra. The last of November he will pass out of and E. of the Square and at the close of the year be about 8° E of its easternmost star.

Saturn (♄) will be brightest November 9 as an evening and all-night star, and will be very bright for a considerable time before and after that time. As two and one-half years are required for him to pass through one sign or constellation, we can scarcely detect any change in position with respect to the stars from month to month. He is in ♈ and of his large family of satellites — ten in all — only one (Titan) is ordinarily visible with a 3-inch telescope, but his wonderful ring system is always visible in such an instrument, except when the Earth is crossing their plane every 15 years. The ring system is best observed in August about the time of the western quadrature of ♄. From August on he will be only a few degrees west of the Pleiades and Hyades.

Uranus (♅ or ♅) will be brightest July 20, and will not be near any bright or conspicuous star. Perhaps the best time for an amateur to locate this planet will be at its close conjunction with ♂ March 11, when ♅ will be seen for several days only one-third of a degree (or about one-half the Moon's apparent diameter) N. of ♂.

Neptune (♆), the outermost known of our planetary family, will be brightest January 11, in ♊, a few degrees S. of Castor and Pollux. It is stated that a good opera or field glass will show ♆ at the time of ☍, or when brightest. Look for it on a line from Castor to Procyon nearly midway between those stars with a fine cluster of dim stars to the west.

VISIBILITY OF THE PRINCIPAL PLANETS, 1911



Explanation

The light portions show when and to what extent each of the planets named will be visible.

See I H C Almanac and Encyclopedia for 1910 for Extended Explanation.

Examples: Venus will be east of the Sun, an evening star, and increasing her angular distance from the Sun until July 7, and will be brightest August 10, when much nearer the Sun. After this she approaches the Sun and decreases in brightness to invisibility September 15, when at inferior conjunction, or exactly between the Earth and Sun. She reappears, shortly after her conjunction, west of the Sun as a morning star and again widens her distance from the Sun until November 26, being brightest October 22. Thus it will be seen that she may be at her brightest twice in one year, but never when farthest from the Sun —in angular distance—as in the case (nearly) of the superior planets.

Mars starts in the year as a morning star and gradually grows in brightness as he recedes from the Sun until November 25 when he will be at opposition, of 180° from the Sun, rising at sunset and shining all night. He will begin to be seen in the evening hours August 0, and by about December 1 he may very properly be called an "all-night star," appearing equally in the evening and morning hours.

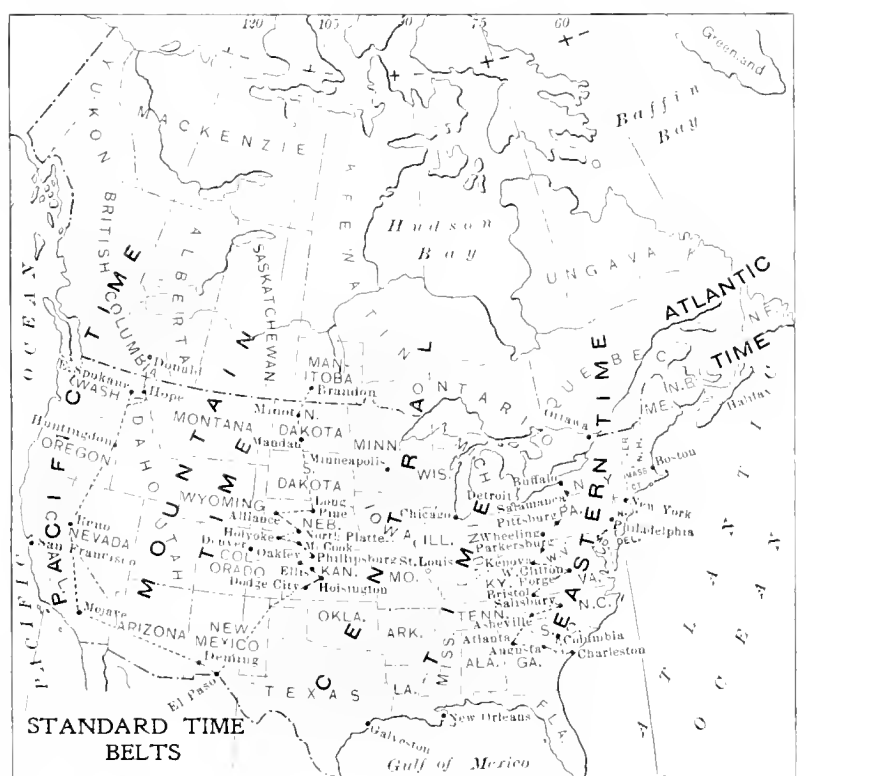
Replies to all questions as to the Star and Planet Charts will be made to all who enclose a stamped and self-addressed envelope, by Berlin H. Wright, DeLand, Fla.

Standard Time

For the convenience of the railroads and business in general a standard of time was established by mutual agreement in 1883, and by this calculation trains are now run and local time is regulated. By this system the United States, extending from 65° to 125° west longitude, is divided into four time sections, each of 15° of longitude, exactly equivalent to one hour (7½° or 30 m. on each side of a meridian), commencing with the 75th meridian. The first or eastern section includes all territory between the Atlantic Coast and an irregular line drawn from Buffalo to Charleston, S. C., the latter city being its southernmost point. The second or central section includes all the territory between this eastern line and another irregular line extending from Bismarck, N. D., to the mouth of the Rio Grande. The third or mountain section includes all the territory between the last-named line and nearly all the western borders of Idaho, Nevada, and Arizona. The fourth or Pacific section includes all the territory of the United States between the boundary of the mountain section and the Pacific Coast. Inside of each of these sections standard time is uniform, and the time of each section differs from that next to it by exactly one hour.

It is obvious that to express the time of rising and setting of the Sun and Moon in standard time would limit the usefulness of such data to the single point or place for which it was computed, while in mean time it is practically correct for places as widely separated as the width of the continent (see note at bottom of February calendar), and persons having obtained the mean time by the rising or setting of the Sun or Moon, may easily ascertain the correct standard time of any event by making use of the following table.

The 60th, 75th, 90th, 105th and 120th meridians west of Greenwich are the ones from which the various standards are reckoned. Ascertain which is the nearest to the point in question and the *difference* in longitude, then if the station be west of the meridian add this difference of longitude (4 m. = 1°) and if east subtract, as indicated by the signs in the different divisions (see maps).



If the original plan of reckoning from the above-named meridians had been followed the correction could never be over 30 m., whereas it is often more. By reference to the following table and locating the place the correction is desired for (if not named in the table), by means of other places there named, the correction for all points may be readily obtained by approximation.

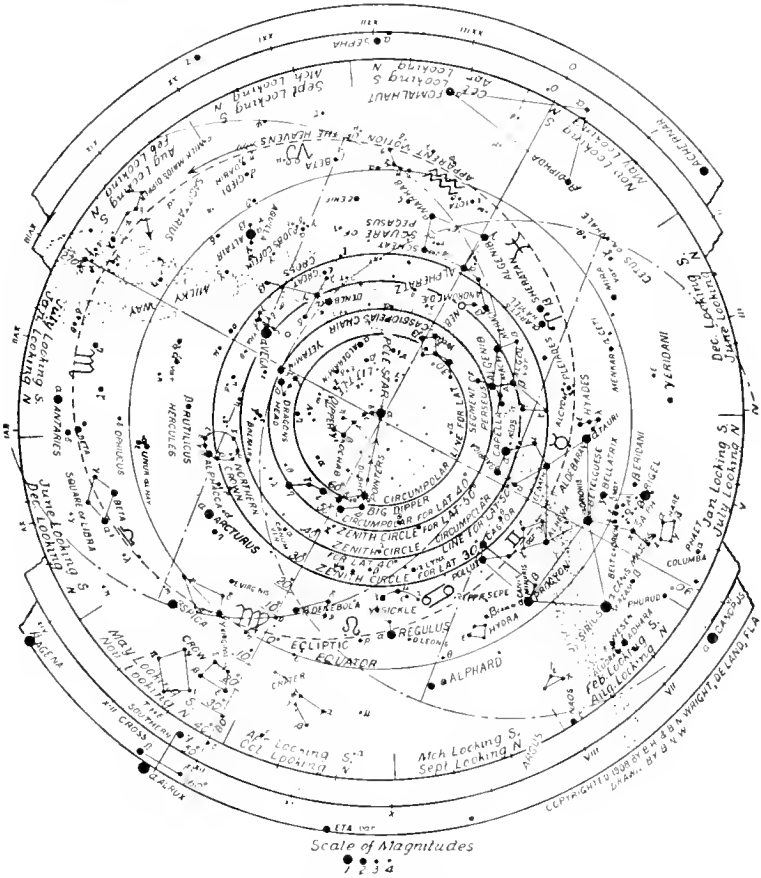
In the Dominion of Canada Pacific time is in use from Vancouver to Laggan; Mountain time from Laggan to Broadview; Central time from Broadview to Fort William; Eastern time from Fort William to S. S. Marie and Detroit to Vanceboro; Atlantic or Inter-Colonial time from Vanceboro eastward. (See table and map.)

Standard Time Table — United States

To obtain standard time, add or subtract the figures given to local time.

City	Standard or Division	Correc'n Minutes	City	Standard or Division	Correc'n Minutes
Albany, N. Y.	Eastern	Sub. 5	Little Rock, Ark.	Central	Add 9
Austin, Texas	Central	Add 31	Louisville, Ky.	Central	Sub. 18
Baltimore, Md.	Eastern	Add 6	Lynchburg, Va.	Eastern	Add 17
BatonRouge, La.	Central	Add 40	Memphis, Tenn	Central	Sub. 0
Bismarck, N. Dak.	Central	Add 43	Milwaukee, Wis.	Central	Sub. 8
Boston, Mass.	Eastern	Sub. 16	Mobile, Ala.	Central	Sub. 8
Buffalo, N. Y.	Eastern	Add 16	Montgomery, Ala	Central	Sub. 15
Burlington, Iowa	Central	Add 5	Nashville, Tenn	Central	Sub. 13
Cairo, Ill.	Central	Sub. 3	New Haven, Conn	Eastern	Sub. 8
Charleston, S. C.	Eastern	Add 20	New Orleans, La	Central	Add 0
Chicago, Ill.	Central	Sub. 10	New York, N. Y.	Eastern	Sub. 4
Cincinnati, Ohio	Central	Sub. 22	Norfolk, Va.	Eastern	Add 5
Cleveland, Ohio	Central	Sub. 33	Ogdensburg, N. Y.	Eastern	Add 2
Columbia, S. C.	Eastern	Add 24	Omaha, Neb.	Central	Add 24
Columbus, Ohio	Central	Sub. 28	Pensacola, Fla	Central	Sub. 11
Dayton, Ohio	Central	Sub. 23	Philadelphia, Pa.	Eastern	Add 1
Denver, Colo.	Mount'n	Add 0	Pittsburg, Pa.	Eastern	Add 20
Des Moines, Iowa	Central	Add 14	Portland, Me	Eastern	Sub. 19
Detroit, Mich.	Central	Sub. 28	Providence, R. I	Eastern	Sub. 14
Dubuque, Iowa	Central	Add 3	Quincy, Ill.	Central	Add 0
Duluth, Minn.	Central	Add 9	Raleigh, N. C.	Eastern	Add 15
Erie, Pa.	Central	Sub. 30	Richmond, Va	Eastern	Add 10
Evansville, Ind	Central	Sub. 10	Rochester, N. Y.	Eastern	Add 11
Fort Gibson, Cher. N	Central	Add 21	Rock Island, Ill	Central	Add 3
Fort Smith, Ark.	Central	Add 19	San Francisco, Cal.	Pacific	Add 10
Fort Wayne, Ind.	Central	Sub. 20	Santa Fe, N. M.	Mount'n	Add 4
Galena, Ill.	Central	Add 2	Savannah, Ga.	Central	Sub. 36
Galveston, Texas	Central	Add 19	Shreveport, La.	Central	Add 15
Grand Haven, Mich.	Central	Sub. 15	Springfield, Ill	Central	Sub. 2
Harrisburg, Pa.	Eastern	Add 7	St. Joseph, Mo.	Central	Add 19
Houston, Tex.	Central	Add 21	St. Louis, Mo.	Central	Add 1
Huntsville, Ala	Central	Sub. 12	St. Paul, Minn	Central	Add 12
Indianapolis, Ind.	Central	Sub. 16	Superior City, Wis	Central	Add 8
Jackson, Miss.	Central	Add 1	Syracuse, N. Y.	Eastern	Add 5
Jacksonville, Fla.	Central	Sub. 33	Toledo, Ohio	Central	Sub. 26
Janesville, Wis.	Central	Sub. 4	Trenton, N. J.	Eastern	Sub. 1
Jefferson City, Mo	Central	Add 9	Utica, N. Y.	Eastern	Add 1
Kansas City, Mo.	Central	Add 19	Washington, D. C.	Eastern	Add 8
Keokuk, Iowa	Central	Add 6	Wheeling, W. Va	Eastern	Add 23
Knoxville, Tenn.	Central	Sub. 24	Wilmington, Del	Eastern	Add 2
La Crosse, Wis.	Central	Add 5	Wilmington, N. C	Eastern	Add 13
Lawrence, Kan.	Central	Add 21	Yankton, S. Dak.	Central	Add 29
Lexington, Ky.	Central	Sub. 23			

CHART OF THE HEAVENS



Explanation

If a bright, uncharted body be seen near the "Ecliptic Circle" it must be a planet To locate the planets or Moon, refer to the monthly calendar pages in this Almanac, find the proper signs on the chart in the "Ecliptic Circle" and an inspection of that part of the Heavens, comparing with the Chart, will serve to identify the planet and all surrounding objects. (Large charts published)

Because of the Earth's motion from W. to E. (opposite to the direction of the arrow in the chart), the stars rise 4 m. earlier each day or 30 m. per week or 2 hrs. a month. The chart shows the position at 9 p. m. Then if the position for any other hour be desired, as for 7 p. m., count back one month, or ahead one month for 11 p. m., and so on for any hour of the night, holding the month desired in front as the face looks either to the North or South with name down.

A circle described from the zenith on the "Zenith Circle" for the desired Lat. with a radius of 90 degrees (see graduated meridian) will show what stars are above the horizon. Thus Capella is near the overhead (zenith) point on Lat. 40 degrees N., Jan. 15th, 9 p. m., as will be Algenib in the handle of the "Big Dipper" at 3 a. m. Then from Capella or Algenib all the surrounding visible groups can be identified. The "Pointers" being 5 degrees apart and always in sight may be used as a convenient unit of measure; also when visible the "Belt of Orion" 3 degrees, or the sides of the "Square of Pegasus."

Questions will always be cheerfully answered by BERLIN H. WRIGHT,
(Enclose stamp and self-addressed envelope.) DeLand, Fla

What Uncle Sam is Doing for the Farmer

Farmers do not realize what valuable service the Department of Agriculture is willing to give free of charge. The government spends millions of dollars annually in maintaining this department, and its sole object is to improve agricultural conditions. The results of its experiments, the information it collects, seeds, publications, etc., are all distributed to farmers free of charge.

This department is divided into a number of bureaus or divisions, which have charge of various branches of the work.

The **Bureau of Animal Industry** has charge of the work of the department relating to the live stock industry—investigates the existence, nature, and prevention of dangerous diseases of live stock, conducts investigations in breeding and feeding of animals, etc.

The **Bureau of Plant Industry** studies plant life in all its relations to agriculture. The forest service has charge of all investigations in forestry, and gives practical assistance to tree planters.

The **Bureau of Chemistry** investigates methods proposed for the analysis of plants, fertilizers, and agricultural products, and makes such analyses as pertain in general to the interests of agriculture.

The **Bureau of Soils** is intrusted with the investigation of surveying and mapping of soils, the investigation of the cause and prevention of the rise of alkali in soils, and the drainage of soils.

The **Bureau of Entomology** obtains and disseminates information regarding injurious insects affecting field crops, fruits, small fruits, truck crops, forests and forest products, stored products, etc.

The **Bureau of Biological Survey** studies the geographic distribution of animals and plants, maps the natural life zones of the country, etc.

The **Bureau of Statistics** collects information as to the condition, production, etc., of the principal crops, and the status of farm animals; investigates land tenures, costs of producing farm products; country life education; transportation and other lines of rural economics, issuing bulletins on these subjects.

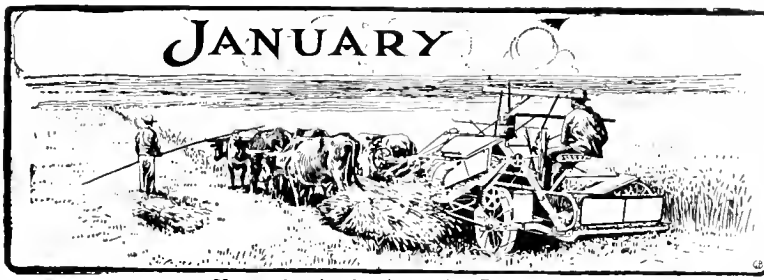
In addition to the above bureaus, there is a Division of Accounts and Disbursements, and Division of Publications, a Librarian, Office of Experiment Stations, and Office of Public Roads.

Farmers' Bulletins

Below is a partial list of helpful Farmers' Bulletins available for distribution, giving the title and number of pages in each. Copies will be sent free to any address in the United States on application to a Senator, Representative, or Delegate in Congress, or to the Secretary of Agriculture, Washington, D. C. Applications from residents in foreign countries should be sent to the Superintendent of Documents, Government Printing Office, Washington, D. C.; price per copy, 6 cents, including postage.

22. The Feeding of Farm Animals. Pp. 32.
24. Hog Cholera and Swine Plague. Pp. 16
25. Peanuts; Culture and Uses. Pp. 24.
27. Flax for Seed and Fiber. Pp. 18.
28. Weeds; And How to Kill Them. Pp. 32.
29. Souring and Other Changes in Milk. Pp. 23.
30. Grape Diseases on the Pacific Coast. Pp. 15.
32. Silos and Silage. Pp. 32.
33. Peach Growing for Market. Pp. 24.
35. Potato Culture. Pp. 24.
36. Cotton Seed and Its Products. Pp. 16.
37. Kafir Corn; Culture and Uses. Pp. 12.
39. Onion Culture. Pp. 31.

JANUARY



Harvesting in the Argentine Republic

Moon's Phases	D.	Inter-Col. T. H.	M.	Eastern T. H.	M.	Central T. H.	M.	Mountain T. H.	M.	Pacific T. H.	M.
First Quarter	8	2	20	1	20	0	20	11	20 7th	10	20 7th
Full Moon	14	6	26	5	26	4	26	3	26	2	26
Last Quarter	22	2	21	1	21	0	21	11	21 21st	10	21 21st
New Moon	30	5	44	4	44	3	44	2	44	1	44

Day of Mo.	Day of Wk.	Light and Dark Moon	Moon's Place	UNITED STATES Northern States Sun Rises H. M.	Sun Sets H. M.	Moon S. & R H. M.	Southern States Sun Rises H. M.	Sun Sets H. M.	Moon S. & R. H. M.
1	Sun	☾	♑	7 25	4 43	5 27	7 3	5 6	6 7
2	M	☾	♒	7 25	4 44	6 31	7 3	5 7	7 6
3	Tu	☾	♒	7 25	4 45	7 39	7 3	5 7	8 7
4	W	☾	♒	7 25	4 46	8 48	7 4	5 8	9 8
5	Th	☾	♒	7 25	4 47	9 56	7 4	5 9	10 8
6	Fr	☾	♒	7 25	4 48	11 7	7 4	5 10	11 10
7	Sat	☾	♓	7 25	4 49	morn	7 4	5 11	morn
8	Sun	☾	♓	7 24	4 50	14	7 4	5 11	9
9	M	☾	♈	7 24	4 51	1 27	7 4	5 12	1 13
10	Tu	☾	♈	7 24	4 52	2 41	7 3	5 13	2 18
11	W	☾	♉	7 24	4 53	3 58	7 3	5 14	3 27
12	Th	☾	♉	7 23	4 54	5 16	7 3	5 15	4 38
13	Fri	☾	♊	7 23	4 55	6 30	7 3	5 16	5 47
14	Sat	☾	♊	7 23	4 56	rises	7 3	5 17	rises
15	Sun	☾	♋	7 22	4 57	5 47	7 3	5 18	6 21
16	M	☾	♋	7 22	4 59	7 1	7 2	5 19	7 27
17	Tu	☾	♌	7 21	5 0	8 15	7 2	5 20	8 32
18	W	☾	♌	7 21	5 1	9 21	7 2	5 21	9 31
19	Th	☾	♍	7 21	5 2	10 27	7 1	5 21	10 28
20	Fr	☾	♍	7 20	5 3	11 31	7 1	5 22	11 24
21	Sat	☾	♍	7 19	5 4	morn	7 1	5 23	morn
22	Sun	☾	♎	7 18	5 5	31	7 0	5 24	17
23	M	☾	♎	7 17	5 7	1 35	7 0	5 25	1 13
24	Tu	☾	♍	7 17	5 8	2 38	6 59	5 26	2 9
25	W	☾	♍	7 16	5 9	3 41	6 59	5 27	3 6
26	Th	☾	♍	7 16	5 10	4 43	6 58	5 28	4 3
27	Fr	☾	♏	7 15	5 11	5 42	6 58	5 29	4 59
28	Sat	☾	♏	7 14	5 13	6 34	6 57	5 30	5 51
29	Sun	☾	♐	7 13	5 14	7 18	6 56	5 31	6 39
30	M	☾	♑	7 12	5 15	sets	6 56	5 32	sets
31	Tu	☾	♒	7 12	5 16	6 40	6 56	5 33	7 2

The World's Calendar for Wheat Harvests

Every month in the year the world has a wheat harvest somewhere.

During January they are harvesting in New Zealand and the Argentine Republic.

The Argentine is growing into a new agricultural empire, and promises soon to rank well up as a wheat producer. Its wheat exports for 1908 totaled 155,000,000 bushels.

Weather Calendar

See Explanation on page 5.

1— 2. Fair and Mild.
3— 8. Storm Period.
9—12. Cold Wave.
13—15. Milder, sleet and snow.
16—20. Storm Period.
21—25. Cold Wave.
26—29. High Wind and severe storm.
30—31. Fair and Cool

Farmers' Bulletins (*Continued*)

41. Fowls: Care and Feeding. Pp. 24.
42. Facts about Milk. Pp. 32.
43. Sewage Disposal on the Farm. Pp. 20
44. Commercial Fertilizers. Pp. 24.
46. Irrigation in Humid Climates. Pp. 27
47. Insects Affecting the Cotton Plant. Pp. 32.
48. The Manuring of Cotton. Pp. 16.
49. Sheep Feeding. Pp. 24.
51. Standard Varieties of Chickens. Pp. 48.
52. The Sugar Beet. Pp. 48.
55. The Dairy Herd. Pp. 24.
58. The Soy Bean as a Forage Crop. Pp. 24
59. Bee Keeping. Pp. 32
60. Methods of Curing Tobacco. Pp. 16.
61. Asparagus Culture. Pp. 40.
62. Marketing Farm Produce. Pp. 28.
64. Ducks and Geese. Pp. 48.
66. Meadows and Pastures. Pp. 28
68. The Black Rot of the Cabbage. Pp. 22.
70. Insect Enemies of the Grape. Pp. 23
71. Essentials in Beef Production. Pp. 24
72. Cattle Ranges of the Southwest. Pp. 32.
74. Milk as Food. Pp. 30
77. The Liming of Soils. Pp. 16.
80. The Peach Twig-borer. Pp. 16
81. Corn Culture in the South. Pp. 24
82. The Culture of Tobacco. Pp. 24
83. Tobacco Soils. Pp. 23.
86. Thirty Poisonous Plants. Pp. 32
87. Experiment Station Work — VIII. Pp. 32.
88. Alkali Lands. Pp. 23.
91. Potato Diseases and Treatment. Pp. 12.
93. Sugar as Food. Pp. 27.
96. Raising Sheep for Mutton. Pp. 48
98. Suggestions to Southern Farmers. Pp. 48.
99. Insect Enemies of Shade Trees. Pp. 30.
100. Hog Raising in the South. Pp. 40
101. Millets. Pp. 28.
102. Southern Forage Plants. Pp. 48
104. Notes on Frost. Pp. 24.
106. Breeds of Dairy Cattle. Pp. 48
108. Saltbushes. Pp. 20.
109. Farmers' Reading Courses. Pp. 20
110. Rice Culture in the United States. Pp. 28
111. Farmers' Interest in Good Seed. Pp. 24.
113. The Apple and How to Grow It. Pp. 32.
115. Hop Culture in California. Pp. 27
116. Irrigation in Fruit Growing. Pp. 48.
118. Grape Growing in the South. Pp. 32.
120. Insects Affecting Tobacco. Pp. 32.
121. Beans, Peas, and other Legumes as Food. Pp. 32.
125. Protection of Food Products from Injurious Temperatures. Pp. 20.
126. Practical Suggestions for Farm Buildings. Pp. 48.
127. Important Insecticides. Pp. 42.
128. Eggs and Their Uses as Foods. Pp. 32.
129. Sweet Potatoes. Pp. 40
132. Insect Enemies of Growing Wheat. Pp. 10.
134 Tree Planting in Rural School Grounds. Pp. 38.
135. Sorghum Sirup Manufacture. Pp. 40.
136. Earth Roads. Pp. 24.
137 The Angora Goat. Pp. 48
138. Irrigation in Field and Garden. Pp. 40.
139. Emmer: A Grain for the Semi-arid Regions. Pp. 16.
140. Pineapple Growing. Pp. 48.
141 Poultry Raising on the Farm. Pp. 16.
142. Principles of Nutrition and Nutritive Value of Food. Pp. 48.
143. The Conformation of Beef and Dairy Cattle. Pp. 44.
145. Carbon Bisulphid, as an Insecticide. Pp. 28.
146. Insecticides and Fungicides. Pp. 16.
147. Winter Forage Crops for the South. Pp. 30.
148 Celery Culture. Pp. 32.
150. Clearing New Land. Pp 24.
151. Dairying in the South. Pp. 48.
152. Scabies in Cattle. Pp. 24.
153. Orchard Enemies in the Pacific Northwest. Pp. 39.
154 The Home Fruit Garden: Preparation and Care. Pp. 20.
155. How Insects Affect Health in Rural Districts. Pp. 20.
156. The Home Vineyard. Pp. 24
157. The Propagation of Plants. Pp. 24
158. How to Build Small Irrigating Ditches. Pp. 28.
159. Scab in Sheep. Pp. 48.
161. Practical Suggestions for Fruit Growers. Pp. 28.
164. Rape as a Forage Crop. Pp. 16.
165. Culture of the Silkworm. Pp. 32.
166. Cheese Making on the Farm. Pp. 10.
167. Cassava. Pp. 32.
168. Pearl Millet. Pp. 16.
170. Principles of Horse Feeding. Pp. 44.
172. Scale Insects and Mites on Citrus Trees. Pp. 43.
173. Primer of Forestry. Pp. 48.
174 Broom Corn. Pp. 32.
176. Cranberry Culture. Pp. 20.
177. Squab Raising. Pp. 32.
178. Insects Injurious in Cranberry Culture. Pp. 32.
179. Horseshoeing. Pp. 31.
181. Pruning. Pp. 30.
182. Poultry as Food. Pp. 40.
183. Meat on the Farm.— Butchering, Curing, etc. Pp. 30.
184 Marketing Live Stock. Pp. 40.
185. Beautifying the Home Grounds. Pp. 24.
187. Drainage of Farm Lands. Pp. 40.
188. Weeds Used in Medicine. Pp. 48.
192. Barnyard Manure. Pp. 32.
194. Alfalfa Seed. Pp. 14
195. Annual Flowering Plants. Pp. 48.
197. Importation of Game Birds and Eggs Propagation. Pp. 30.
198. Strawberries. Pp. 24.
199. Corn Growing. Pp. 32.
200. Turkeys. Pp. 44.
201. Cream Separator on Western Farms. Pp. 27.
203. Canned Fruits, Preserves, and Jellies. Pp. 32.
204. The Cultivation of Mushrooms. Pp. 24.
205. Pig Management. Pp. 40.
206. Milk Fever and Its Treatment. Pp. 10.
208. Varieties of Fruits Recommended for Planting. Pp. 48.
209. Controlling the Boll Weevil in Cotton Seed and at Ginneries. Pp. 32
211. The Use of Paris Green in Controlling the Cotton Boll Weevil. Pp. 23.
213. Raspberries. Pp 38.

Harvesting in East India

Moon's Phases	D	Inter-Col. T. H.	M.	Eastern T. H.	M.	Central T. H.	M	Mountain T. H.	M	Pacific T. H	M
☽ First Quarter	6	11	27	10	27	9	27	8	27	7	27
○ Full Moon	13	6	37	5	37	4	37	3	37	2	37
☾ Last Quarter	20	11	44	10	44	9	44	8	54	7	44
● New Moon	28	8	31	7	31	6	31	5	31	4	31

Day of Mo	Day of Wk	Light and Dark Moon	Moon's Place	UNITED STATES Northern States Sun Rises H. M	Sun Sets H. M.	Moon S. & R. H. M	Southern States Sun Rises H. M.	Sun Sets H. M.	Moon S. & R. H. M.
1	W	☽	♒	7 11	5 18	7 48	6 54	5 34	8 2
2	Th	☽	♒	7 10	5 19	8 56	6 54	5 35	9 3
3	Fr	☽	♒	7 9	5 20	10 7	6 53	5 36	10 4
4	Sat	☽	♒ ♓	7 7	5 21	11 17	6 52	5 37	11 6
5	Sun	☽	♓	7 6	5 22	morn	6 51	5 38	morn
6	M	☽	♓	7 5	5 23	29	6 51	5 38	6
7	Tu	☽	♓ ♈	7 4	5 25	1 46	6 50	5 39	1 17
8	W	☽	♈	7 3	5 26	3 0	6 49	5 40	2 24
9	Th	☽	♈	7 2	5 27	4 13	6 48	5 41	3 32
10	Fr	☽	♈ ♉	7 1	5 28	5 26	6 47	5 42	4 37
11	Sat	☽	♉	7 0	5 30	6 26	6 46	5 43	5 40
12	Sun	☽	♉	6 58	5 31	rises	6 45	5 44	rises
13	M	☽	♉	6 57	5 32	5 50	6 44	5 45	6 12
14	Tu	☽	♉	6 56	5 34	7 2	6 43	5 46	7 15
15	W	☽	♉	6 55	5 35	8 9	6 42	5 46	8 14
16	Th	☽	♍	6 53	5 36	9 13	6 41	5 47	9 10
17	Fr	☽	♍	6 52	5 37	10 18	6 40	5 48	10 7
18	Sat	☽	♎	6 51	5 39	11 21	6 39	5 49	11 2
19	Sun	☽	♎	6 49	5 40	morn	6 38	5 50	11 59
20	M	☽	♎	6 48	5 41	29	6 37	5 51	morn
21	Tu	☽	♏	6 46	5 43	1 29	6 36	5 52	56
22	W	☽	♏	6 45	5 44	2 30	6 36	5 52	1 54
23	Th	☽	♐	6 44	5 45	3 31	6 35	5 53	2 48
24	Fr	☽	♐	6 42	5 46	4 29	6 34	5 54	3 43
25	Sat	☽	♐	6 41	5 48	5 13	6 33	5 55	4 32
26	Sun	☽	♑	6 39	5 49	5 52	6 32	5 56	5 16
27	M	☽	♑	6 38	5 50	6 27	6 31	5 57	5 57
28	Tu	☽	♒	6 37	5 51	sets	6 30	5 57	sets

The World's Calendar for Wheat Harvests

During the latter part of February the harvest is on in East India, Upper Egypt and Chili.

In Upper Egypt the camel is used as a draft animal to operate American harvesting machines. In Chili the pony and oxen draw the harvesters. In East India primitive methods are still in use—the reaping hook has not been superseded by modern harvesting machines, owing to the multitudes of penny-a-day laborers.

Weather Calendar

See Explanation on page 5.

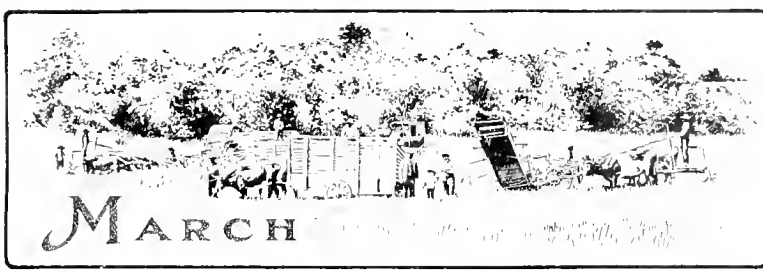
1 — 3. Mild, and snow or rain
4 — 8. General Storm Period
9 — 13. Cold Period.
14 — 17. Milder.
18 — 21. Storm Period.
22 — 25. High Wind and Colder
26 — 28 Milder and continued high wind

NOTE.—For Pacific Coast points corresponding to the two zones of latitude above add 6 minutes to moon's rising and setting, or add 2 minutes for each hour of longitude west of Washington.

The full-faced or black type figures are P. M.; all others are A. M.

Farmers' Bulletins (*Continued*)

215. Alfalfa Growing. Pp. 42.
216. The Control of the Boll Weevil. Pp. 32.
217. Essential Steps in Securing an Early Crop of Cotton. Pp. 16.
219. Lessons from the Grain Rust Epidemic of 1924. Pp. 24.
220. Tomatoes. Pp. ..
221. Fungous Diseases of the Cranberry. Pp. 16.
223. Miscellaneous Cotton Insects in Texas. Pp. 24.
224. Canadian Field Peas. Pp. 16.
228. Forest Planting and Farm Management. Pp. 22.
229. The Production of Good Seed Corn. Pp. 24.
230. Game Laws, 1926. Pp. 56.
231. Spraying for Cucumber and Melon Diseases. Pp. 24.
232. Okra: Its Culture and Uses. Pp. 16.
234. The Guinea Fowl. Pp. 24.
235. Preparation of Cement. Pp. 32.
236. Incubation and Incubators. Pp. 32.
238. Citrus Fruit Growing in the Gulf States. Pp. 40.
239. The Corrosion of Fence Wire. Pp. 32.
240. Inoculation of Legumes. Pp. 8.
241. Butter Making on the Farm. Pp. 32.
242. An Example on Model Farming. Pp. 16.
243. Fungicides and Their Use in Preventing Diseases of Fruits. Pp. 32.
245. Renovation of Worn-out Soils. Pp. 32.
246. Saccharine Sorghums for Forage. Pp. 27.
247. The Control of the Codling Moth and the Apple Scab. Pp. 24.
249. Cereal Breakfast Foods. Pp. 30.
250. The Prevention of Wheat Smut and Loose Smut of Oats. Pp. 16.
252. Maple Sugar and Sirup. Pp. 32.
253. The Germination of Seed Corn. Pp. 16.
255. The Home Vegetable Garden. Pp. 47.
256. Preparation of Vegetables for the Table. Pp. 48.
257. Soil Fertility. Pp. 30.
258. Texas or Tick Fever and Its Prevention. Pp. 45.
260. Seed of Red Clover and Its Impurities. Pp. 24.
261. The Cattle Tick. Pp. 22.
263. Practical Information for Beginners in Irrigation. Pp. 45.
264. The Brown-Tail Moth and How to Control It. Pp. 22.
265. Management of Soils to Conserve Moisture. Pp. 30.
268. Industrial Alcohol: Sources and Manufacture. Pp. 45.
269. Industrial Alcohol: Uses and Statistics. Pp. 29.
270. Modern Conveniences for the Farm Home. Pp. 40.
271. Forage Crop Practices in Western Oregon and Western Washington. Pp. 39.
272. A Successful Hog and Seed-Corn Farm. Pp. 16.
273. Flax Culture. Pp. 30.
275. The Gipsy Moth and How to Control It. Pp. 22.
277. The Use of Alcohol and Gasoline in Farm Engines. Pp. 45.
278. Leguminous Crops for Green Manuring. Pp. 27.
279. A Method of Eradicating Johnson Grass. Pp. 16.
280. A Profitable Tenant Dairy Farm. Pp. 16.
282. Celery. Pp. 30.
283. Spraying for Apple Diseases and the Codling Moth in the Ozarks. Pp. 42.
284. Insect and Fungous Enemies of the Grape East of the Rocky Mountains. Pp. 48.
285. The Advantage of Planting Heavy Cotton Seed. Pp. 16.
286. Comparative Value of Whole Cotton Seed and Cotton-Seed Meal in Fertilizing Cotton. Pp. 14.
287. Poultry Management. Pp. 48.
288. Nonsaccharine Sorghums. Pp. 28.
289. Beans. Pp. 28.
290. The Cotton Bollworm. Pp. 32.
291. Evaporation of Apples. Pp. 38.
292. Cost of Filling Silos. Pp. 15.
293. Use of Fruit as Food. Pp. 38.
294. Farm Practice in the Columbia Basin Uplands. Pp. 32.
295. Potatoes and Other Root Crops as Food. Pp. 45.
297. Methods of Destroying Rats. Pp. 8.
298. The Food Value of Corn and Corn Products. Pp. 40.
299. Diversified Farming Under the Plantation System. Pp. 14.
300. Some Important Grasses and Forage Plants for the Gulf Coast Region. Pp. 15.
301. Home-Grown Tea. Pp. 16.
302. Sea Island Cotton: Its Culture, Improvement, and Diseases. Pp. 48.
303. Corn Harvesting Machinery. Pp. 32.
304. Growing and Curing Hops. Pp. 39.
305. Dodder in Relation to Farm Seeds. Pp. 27.
307. Roselle, Its Culture and Uses. Pp. 19.
308. Game Laws for 1927. Pp. 52.
311. A Successful Alabama Diversification Farm. Pp. 24.
310. Sand-Clay and Burnt-Clay Roads. Pp. 16.
312. A Successful Southern Hay Farm. Pp. 15.
313. Harvesting and Storing Corn. Pp. 20.
314. A Method of Breeding Early Cotton to Escape Boll-Weevil Damage. Pp. 28.
315. Progress in Legume Inoculation. Pp. 20.
318. Cowpeas. Pp. 28.
319. Demonstration Work in Cooperation with Southern Farmers. Pp. 22.
321. The Use of the Split-Log Drag on Earth Roads. Pp. 14.
322. Milo as a Dry-Land Grain Crop. Pp. 23.
323. Clover Farming on the Sandy Jack-Pine Lands of the North. Pp. 24.
324. Sweet Potatoes. Pp. 39.
325. Small Farms in the Corn Belt. Pp. 29.
326. Building up a Run-down Cotton Plantation. Pp. 22.
327. The Conservation of Natural Resources. Pp. 12.
328. Silver Fox Farming. Pp. 22, figs. 19.
330. Deer Farming in the United States. Pp. 22, figs. 2.



Harvesting in Chili

Moon's Phases	D	Inter-Col. T. H.	M	Eastern T. H.	M	Central T. H.	M	Mountain T. H.	M	Pacific T. H.	M
First Quarter	7	7	1	6	1	5	1	4	1	3	1
Full Moon	14	7	58	6	58	5	58	4	58	3	58
Last Quarter	22	8	26	7	26	6	26	5	26	4	26
New Moon	30	8	38	7	38	6	38	5	38	4	38

Day of Mo.	Day of Wk	Light and Dark Moon	Moon's Place	UNITED STATES — Northern States: Sun Rises H. M.	Sun Sets H. M.	Moon S. & R. H. M.	Southern States: Sun Rises H. M.	Sun Sets H. M.	Moon S. & R. H. M.
1	W	☽	♓	6 35	5 53	6 43	6 28	5 58	6 52
2	Th	☽	♓	6 34	5 53	7 55	6 27	5 58	7 55
3	Fr	☽	♈	6 32	5 54	9 7	6 26	5 59	8 58
4	Sat	☽	♉	6 30	5 55	10 21	6 25	6 0	10 3
5	Sun	☽	♊	6 29	5 56	11 35	6 24	6 1	11 8
6	M	☽	♊	6 27	5 57	morn	6 23	6 1	morn
7	Tu	☽	♋	6 25	5 58	53	6 22	6 2	18
8	W	☽	♋	6 24	5 59	2 6	6 21	6 3	1 25
9	Th	☽	♌	6 22	6 0	3 14	6 20	6 3	2 35
10	Fr	☽	♌	6 20	6 1	4 11	6 19	6 4	3 29
11	Sat	☽	♍	6 19	6 2	4 59	6 17	6 5	4 22
12	Sun	☽	♍	6 17	6 3	5 36	6 16	6 6	5 6
13	M	☽	♎	6 16	6 4	6 7	6 14	6 6	5 45
14	Tu	☽	♎	6 14	6 5	rises	6 13	6 7	rises
15	W	☽	♏	6 12	6 6	6 53	6 11	6 8	6 58
16	Th	☽	♏	6 11	6 8	8 2	6 10	6 9	7 54
17	Fr	☽	♐	6 9	6 9	9 6	6 9	6 9	8 50
18	Sat	☽	♐	6 7	6 10	10 10	6 8	6 10	9 47
19	Sun	☽	♑	6 6	6 11	11 16	6 6	6 11	10 45
20	M	☽	♑	6 4	6 12	morn	6 5	6 11	11 41
21	Tu	☽	♑	6 2	6 13	18	6 3	6 12	morn
22	W	☽	♒	6 1	6 14	1 19	6 2	6 13	38
23	Th	☽	♒	5 59	6 15	2 16	6 1	6 14	1 32
24	Fr	☽	♒	5 58	6 16	3 6	5 59	6 14	2 24
25	Sat	☽	♓	5 56	6 17	3 48	5 58	6 15	3 9
26	Sun	☽	♓	5 54	6 18	4 25	5 57	6 16	3 52
27	M	☽	♓	5 52	6 19	4 54	5 56	6 16	4 20
28	Tu	☽	♈	5 51	6 20	5 19	5 55	6 17	5 2
29	W	☽	♈	5 49	6 21	5 42	5 54	6 18	5 33
30	Th	☽	♉	5 47	6 22	sets	5 52	6 18	sets
31	Fr	☽	♉	5 45	6 23	8 3	5 50	6 19	7 48

The World's Calendar for Wheat Harvests

March witnesses a continuation of the harvest begun during February in East India, Upper Egypt and Chili.

In Egypt, American and English engineers are building a dam across the Nile at Philae which will control the annual Nile flood, making Egypt like our own Western irrigated lands.

Weather Calendar

See Explanation on page 5.

1— 4. Storm Period.
5—10. Cold Wave.
11—13. Milder.
14—17. Storm Period.
18—21. Warmer, with local showers.
22—27. General Storm Period.
28—31. High Wind and Cold.

Farmers' Bulletins (*Continued*)

331. Forage Crops for Hogs in Kansas and Oklahoma. Pp. 24.
332. Nuts and Their Uses as Food. Pp. 28, figs. 2.
333. Harmful and Beneficial Mammals of the Arid Interior. Pp. 31, figs. 9.
337. Cropping System for New England Dairy Farms. Pp. 24, figs. 2.
338. Macadam Roads. Pp. 30, figs. 15.
339. Alfalfa. Pp. 48, figs. 14.
343. The Cultivation of Tobacco in Kentucky and Tennessee. Pp. 28, figs. 13.
344. The Boll-Weevil Problem with Special Reference to Means of Reducing Damage. Pp. 46, figs. 6.
346. The Computation of Rations for Farm Animals by the Use of Energy Values. Pp. 32.
347. The Repair of Farm Equipment. Pp. 30, figs. 23.
349. The Dairy Industry in the South. Pp. 37, figs. 17.
350. Dehorning Cattle. Pp. 14, figs. 6.
351. The Tuberculin Test of Cattle for Tuberculosis. Pp. 8.
354. Onion Culture. Pp. 36, figs. 25.
355. A Successful Poultry and Dairy Farm. Pp. 42, figs. 7.
356. Peanuts. Pp. 45, figs. 27.
357. Methods of Poultry Management at the Maine Agricultural Experiment Station. Pp. 30, figs. 1.
358. A Primer of Forestry. Part II: Practical Forestry. Pp. 48, figs. 23. (See also Bulletin 270 in the list under Experiment Station Work, P. 56.)
359. Canning Vegetables in the Home. Pp. 30, figs. 9.
360. Conditions Affecting the Value of Market Hay. Pp. 20, figs. 7.
363. The Use of Milk as Food. Pp. 44, charts 3.
364. A Profitable Cotton Farm. Pp. 24, figs. 12.
365. Potato Growing in Northern Sections. Pp. 31, figs. 11.
367. Lightning and Lightning Conductors. Pp. 22, figs. 5.
369. How to Destroy Rats. Pp. 22, figs. 5.
370. Replanning a Farm for Profit. Pp. 30.
371. Drainage of Irrigated Lands. Pp. 52, figs. 19.
372. Soy Beans. Pp. 20, figs. 6.
373. Irrigation of Alfalfa. Pp. 48, figs. 32.
375. Care of Food in the Home. Pp. 40, figs. 2.
377. Harmfulness of Headache Mixtures. Pp. 19.
378. Method of Exterminating the Texas Fever Tick. Pp. 20.
385. Boys' and Girls' Agricultural Clubs. Pp. 23, figs. 11.
389. Bread and Bread Making. Pp. 46, figs. 7.

Rates of Postage and Money Orders

Domestic

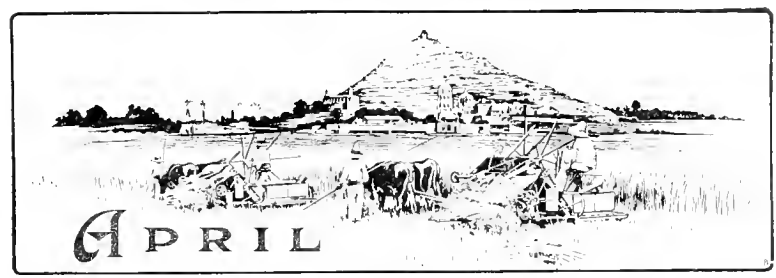
First-Class Matter (Letters, and all Sealed Matter)	2c an oz.
Second-Class (Newspapers and Periodicals)	1c for 4 oz.
Third-Class (Books, Circulars)	1c for 2 oz.
Fourth-Class (Merchandise)	1c. an oz.
Registration Fee (additional postage)	10c.
Immediate Delivery Stamp (additional to regular postage)	10c.
Money Order ($1 to $100)	3c to 30c.

(See below for Explanations and Exceptions.)

First-Class Matter.—Letters and all other written matter (whether sealed or not), excepting manuscript copy accompanying proof sheets; also all matter sealed (see below), 2 cents an ounce or fraction thereof, excepting drop letters at Non-Carrier offices, 1 cent an ounce. Postal cards, 1 cent each. Limit of weight, 4 pounds.

Second-Class.—Newspapers and periodicals, published quarterly and oftener, and not for gratuitous distribution. The general public pay by affixing stamps at the rate of 1 cent for each 4 ounces or part thereof, when not sealed.

Third-Class.—Books (printed, not blank), circulars, other printed matter, proof sheets and manuscript copy accompanying same, valentines, sheet-music, photographs, heliotypes, chromos, posters, lithographs and printed advertising matter in general—all, when not sealed, 1 cent for 2 ounces or fraction. Limit of weight, 4 pounds.



Harvesting in Mexico

Moon's Phases	D	Inter-Col. T. H	M	Eastern T. H.	M.	Central T. H	M	Mountain T. H	M	Pacific T. H	M
First Quarter	6	1	55	0	55	11	55 5th	10	55 5th	9	55 5th
Full Moon	13	10	36	9	36	8	36	7	36	6	36
Last Quarter	21	2	35	1	35	0	35	11	35	10	35
New Moon	28	6	25	5	25	4	25	3	25	2	25

Day of Mo.	Day of Wk.	Light and Dark Moon	Moon's Place	UNITED STATES Northern States Sun Rises H. M.	Sun Sets H. M.	Moon S. & R H. M.	Southern States Sun Rises H. M.	Sun Sets H. M.	Moon S. & R. H. M.
1	Sat		♈	5 44	6 24	9 21	5 47	6 21	8 57
2	Sun		♈	5 42	6 26	10 38	5 45	6 21	10 6
3	M		♉	5 41	6 27	11 54	5 44	6 22	11 15
4	Tu		♉	5 39	6 28	morn	5 43	6 23	morn
5	W		♊	5 37	6 29	1 7	5 41	6 24	23
6	Th		♊	5 36	6 30	2 9	5 40	6 25	1 26
7	Fr		♋	5 34	6 31	2 59	5 39	6 26	2 20
8	Sat		♋	5 33	6 32	3 39	5 38	6 26	3 7
9	Sun		♋	5 31	6 33	4 10	5 36	6 27	3 46
10	M		♌	5 30	6 34	4 36	5 35	6 28	4 20
11	Tu		♌	5 28	6 35	4 58	5 34	6 29	4 50
12	W		♌	5 26	6 36	5 19	5 33	6 29	5 19
13	Th		♍	5 25	6 37	rises	5 31	6 30	rises
14	Fr		♍	5 24	6 38	7 58	5 30	6 31	7 37
15	Sat		♍	5 22	6 39	9 2	5 29	6 31	8 34
16	Sun		♍	5 20	6 40	10 7	5 28	6 32	9 32
17	M		♎	5 19	6 41	11 10	5 27	6 33	10 30
18	Tu		♎	5 17	6 42	morn	5 25	6 33	11 24
19	W		♎	5 16	6 43	7	5 24	6 34	morn
20	Th		♏	5 14	6 44	59	5 23	6 35	16
21	Fr		♏	5 13	6 45	1 45	5 22	6 36	1 4
22	Sat		♏	5 11	6 46	2 22	5 21	6 36	1 46
23	Sun		♐	5 10	6 47	2 53	5 20	6 37	2 24
24	M		♐	5 8	6 48	3 20	5 19	6 38	2 59
25	Tu		♐	5 7	6 49	3 43	5 18	6 39	3 30
26	W		♑	5 6	6 50	4 6	5 17	6 39	4 2
27	Th		♑	5 4	6 51	4 30	5 16	6 40	4 35
28	Fr		♑	5 3	6 52	4 54	5 15	6 40	5 9
29	Sat		♒	5 2	6 53	sets	5 14	6 41	sets
30	Sun		♒	5 0	6 55	9 34	5 13	6 41	8 57

The World's Calendar for Wheat Harvests

April is the harvest month in Lower Egypt, Asia Minor and Mexico.

In Mexico the harvest is carried on almost as it is in this country, except that oxen are frequently used in place of horses. The farms are huge plantations owned by rich Spaniards, while the work is done by peons, or natives, half Spanish and half Indian

Weather Calendar

See Explanation on page 5.

1 — 4.	Fair and Mild.
5 — 9.	Storm Period
11—13.	Clear frosts.
14—16.	Cloudy and warmer
17—20.	General Storm Period.
21—25.	Local Showers.
26—28.	High Wind.
29—30.	Storm Period.

Rates of Postage and Money Orders (*Continued*)

Fourth Class.—Merchandise and samples; blank books and paper; ...es, all matter not included in any of the other classes and not in its nature perishable or liable to injure the contents of the mails. (By ...press ruling the postage on seeds, cuttings, roots, scions, and plants ...s at the rate of 1 cent for each two ounces.) —all, when not sealed and not exceeding 4 pounds in weight, 1 cent an ounce or fraction thereof.

Sealing.—Any matter is regarded as sealed when it is not so wrapped as to allow of a thorough examination without in any way injuring the wrapping.

Registration. All classes of mail matter may be registered in any Post-office by affixing 10 cents in stamps in addition to the regular postage.

Foreign

Registration.—Ten cents additional to ordinary postage on all articles to foreign countries.

On Letters.—Five cents for each ounce or fraction thereof and 3 cents for each additional ounce. Double rates are collected on delivery of unpaid or short-paid letters. Letters to Great Britain and Ireland, Shanghai, China, and Germany, 2 cents an ounce or fraction.

Post Cards.—Single, 2 cents each; with paid reply, 4 cents each.

"Private Mailing Cards" (Post Cards).—Two cents each, subject to conditions governing domestic post cards.

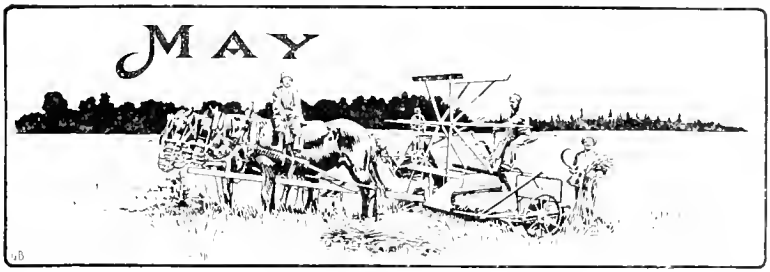
On newspapers, books, pamphlets, photographs, sheet-music, maps, engravings, and similar printed matter, 1 cent each two ounces or fraction thereof. Prepayment required at least in part.

Postage to Canada and Mexico.—The general rule is that articles admitted to the domestic mails of either country are admitted at the same postage rates and under the same conditions to the mails exchanged between the two countries; but this rule is subject to important exceptions, not particularizable in brief, and it is best to consult the postmaster before entrusting merchandise or any unusual matter to the international mails.

Limits of Size and Weights.—Packages of samples of merchandise to foreign countries must not exceed twelve ounces, nor measure more than twelve inches in length, eight inches in breadth, and four in depth, and packages of printed matter must not exceed four pounds six ounces.

Money Order Rates

Sums not exceeding $2.50	3c
Over $ 2.50 and not exceeding $ 5.00	5c
Over $ 5.00 and not exceeding $ 10.00	8c
Over $10.00 and not exceeding $ 20.00	10c
Over $20.00 and not exceeding $ 30.00	12c
Over $30.00 and not exceeding $ 40.00	15c
Over $40.00 and not exceeding $ 50.00	18c
Over $50.00 and not exceeding $ 60.00	20c
Over $60.00 and not exceeding $ 75.00	25c
Over $75.00 and not exceeding $100.00	30c



Harvesting in Algiers

Moon's Phases	D	Inter-Col. T. H	M	Eastern T. H	M	Central T. H	M	Mountain T. H.	M	Pacific T. H.	M
First Quarter	5	0	13	8	1	7	13	0	13	5	13
Full Moon	13	2	0	1	0	6	0	11	9 12th	10	9 12th
Last Quarter	21	5	23	4	24	3	23	2	23	1	23
New Moon	28	2	24	1	24	0	24	11	24 27th	10	24 27th

Day of Mo.	Day of Wk.	Light and Dark Moon	Moon's Place	UNITED STATES Northern States Sun Rises H. M.	Sun Sets H. M.	Moon S. & R. H. M.	Southern States Sun Rises H. M.	Sun Sets H. M.	Moon S. & R. H. M.
1	M		♈	4 56	6 56	10 39	5 12	6 42	10 10
2	Tu		♈	4 58	6 57	12 0	5 11	6 43	11 17
3	W		♈	4 59	6 58	morn	5 10	6 44	morn
4	Th		♉	4 55	6 59	56	5 9	6 44	13
5	Fr		♉	5 54	7 0	1 41	5 8	6 45	1 7
6	Sat		♉	4 53	7 1	2 14	5 7	6 45	1 47
7	Sun		♉	4 52	7 2	2 41	5 6	6 47	2 23
8	M		♉	4 51	7 3	3 4	5 5	6 47	2 54
9	Tu		♊	5 49	7 4	3 24	5 4	6 48	3 22
10	W		♊	4 48	7 5	3 43	5 3	6 49	3 40
11	Th		♊	4 47	7 6	4 3	5 3	6 50	4 17
12	Fr		♊	4 46	7 7	4 24	5 2	6 50	4 46
13	Sat		♊	4 45	7 8	rises	5 1	6 51	rises
14	Sun		♊	4 44	7 9	8 59	5 1	6 52	8 21
15	M		♊	4 43	7 10	10 0	5 0	6 52	9 18
16	Tu		♋	4 42	7 11	10 55	6 59	6 53	10 11
17	W		♋	4 41	7 12	11 42	6 59	6 54	11 0
18	Th		♋	4 40	7 13	morn	6 58	6 54	11 42
19	Fr		♋	4 39	7 14	21	6 58	6 55	morn
20	Sat		♋	4 38	7 15	55	6 57	6 56	21
21	Sun		♌	4 38	7 16	1 20	6 56	6 56	50
22	M		♌	4 37	7 17	1 44	6 56	6 57	1 25
23	Tu		♌	4 36	7 18	2 7	6 55	6 58	1 59
24	W		♌	4 36	7 19	2 28	6 55	6 58	2 20
25	Th		♍	4 35	7 20	2 53	6 55	6 59	3 3
26	Fr		♍	4 34	7 20	3 19	6 54	7 0	3 38
27	Sat		♍	4 34	7 21	3 51	6 54	7 0	4 20
28	Sun		♍	4 33	7 22	sets	6 53	7 1	sets
29	M		♎	4 32	7 23	9 40	6 53	7 2	8 57
30	Tu		♎	4 32	7 23	10 44	6 53	7 2	10 2
31	W		♎	4 31	7 24	11 36	6 53	7 3	10 59

The World's Calendar for Wheat Harvests

May is the harvest season in Algiers, Central Asia, China, Japan and Texas.

Rice is the principal grain crop in Japan and China although in Manchuria considerable grain is grown.

In Algiers both the primitive and modern methods of harvesting are often found in the same field.

Texas is the first state in this country to begin the wheat harvest.

Weather Calendar

See Explanation on page 5

1 — 3	Storm Period.
4 — 8	Showery and Fair
9 — 12	Storm Period.
13 — 17	Pleasant Period.
18 — 21	Western Storms.
22 — 25	Eastern Storms.
26 — 29	High Winds, especially in the E.
30 — 31	Fair and Cool.

Transmitting Money through the Banks

As a means of sending money to distant points, bank drafts are safe, convenient, and economical.

Bank drafts are absolutely safe. If lost in the mail, the bank will issue a duplicate at no additional expense; if paid to the wrong party, the bank so paying is responsible for the amount.

It is convenient to use this form of transmitting money. Simply go to the bank, tell the amount for which you wish the draft written, and name of the person or firm to whom it is to be sent. It is not necessary to register a draft in sending it through the mails, as it cannot be cashed by any one except the person to whom issued.

Bank drafts are the cheapest method of sending money, except of course paying by check. Drafts up to $20.00 cost 5 cents, and for larger amounts the rate is in proportion.

First Aid to the Injured

Burns and Scalds.—Cover with cooking soda and lay wet cloths over the injured part. Household ammonia applied immediately is excellent. Other remedies are: white of egg and olive oil. Olive oil or linseed oil, plain or mixed with chalk and whiting. Sweet or olive oil and lime water.

Lightning.—Dash water over the person struck.

Sunstroke.—Loosen clothing. Get patient into the shade and apply ice-cold water to head. Keep head in elevated position.

Stings of Insects.—Apply weak ammonia, oil, salt water, iodine.

Mad Dog or Snake Bite.—Tie a cord tightly above wound. Suck the wound and cauterize with caustic or white-hot iron immediately, or cut out adjoining parts with a sharp knife. Give stimulants—whiskey or brandy being the most effective.

Fainting.—Place flat on back. Allow fresh air to circulate, and sprinkle with water. Place head lower than rest of body.

Cinders in the Eye.—Rub the other eye. Roll soft paper up like a lamp-lighter and wet the tip to remove, or use a medicine dropper to draw it out.

Fire in One's Clothing.—Don't run—especially not downstairs or out-of-doors. Roll on a carpet, or wrap in a woolen rug or blanket. Keep the head down, so as not to inhale flame.

Drowning.—1. Loosen the clothing, if any. 2. Empty the lungs of water by laying the patient on his stomach, and lifting him by the middle, so that the head hangs down. Jerk the body a few times. 3. Pull tongue forward, using handkerchief, or pin with string, if necessary. 4. Imitate respiration by alternately compressing and expanding the lower ribs about twenty times a minute. Alternately raising and lowering the arms from the sides up above the head, gently but persistently, will stimulate the action of the lungs. 5. Apply warmth and friction to extremities. 6 By holding tongue foreward, closing the nostrils, and pressing the "Adam's apple" back (so as to close entrance to stomach) direct inflation may be tried. Take a deep breath and breathe it forcibly into the mouth of patient, compressing the chest to expel the air. Repeat this operation. 7. Don't give up! People have been saved after hours of patient, active effort. 8. When breathing begins, get patient into a warm bed, give warm drinks, or spirits by teaspoonfuls. Let there be plenty of fresh air and quiet.

Suffocation from Inhaling Illuminating Gas.—Get into the fresh air right away and lie down. Keep warm. Take ammonia—20 drops to a tumbler of water, at frequent intervals. Also, 2 to 4 drops tincture of nux vomica every hour or two for five or six hours.

Harvesting in California

Moon's Phases		Inter-Col. T.		Eastern T.		Central T.		Mountain T.		Pacific T.	
	D.	H.	M.	H.	M.	H	M	H.	M	H	M
☽ First Quarter	3	6	4	5	4	4	4	3	4	2	4
○ Full Moon	11	5	50	4	50	3	50	2	50	1	50
☾ Last Quarter	19	4	01	3	51	2	51	1	51	0	51
● New Moon	26	9	19	8	19	7	19	6	19	5	19

Day of Mo.	Day of Wk.	Light and Dark Moon	Moon's Place	UNITED STATES — Northern States: Sun Rises H. M.	Sun Sets H. M.	Moon S. & R. H. M.	Southern States: Sun Rises H. M.	Sun Sets H. M.	Moon S. & R. H. M.
1	Th	☽	♋	4 31	7 24	morn	4 52	7 3	11 46
2	Fr	☽	♋	4 30	7 25	15	4 52	7 4	morn
3	Sat	☽	♋	4 30	7 26	44	4 52	7 4	23
4	Sun	☽	♋	4 30	7 26	1 9	4 52	7 5	50
5	M	☽	♍	4 29	7 27	1 32	4 51	7 5	1 26
6	Tu	☽	♍	4 29	7 28	1 51	4 51	7 6	1 54
7	W	☽	♎	4 29	7 28	2 10	4 51	7 6	2 21
8	Th	☽	♎	4 29	7 29	2 30	4 51	7 7	2 49
9	Fr	☽	♎	4 28	7 30	2 53	4 51	7 7	3 20
10	Sat	☽	♏	4 28	7 30	3 21	4 51	7 8	3 54
11	Sun	☽	♏	4 28	7 31	rises	4 51	7 8	rises
12	M	○	♐	4 28	7 31	8 48	4 51	7 9	8 5
13	Tu	○	♐	4 28	7 32	9 40	4 51	7 9	8 57
14	W	○	♐	4 28	7 32	10 22	4 51	7 9	9 42
15	Th	○	♑	4 28	7 32	10 56	4 51	7 10	10 22
16	Fr	○	♑	4 28	7 33	11 26	4 51	7 10	10 59
17	Sat	○	♒	4 28	7 33	11 48	4 52	7 10	11 29
18	Sun	○	♒	4 28	7 33	morn	4 52	7 11	12 0
19	M	○	♒	4 28	7 34	11	4 52	7 11	morn
20	Tu	○	♓	4 29	7 34	32	4 52	7 11	29
21	W	○	♓	4 29	7 34	53	4 52	7 11	59
22	Th	○	♈	4 29	7 34	1 17	4 53	7 11	1 32
23	Fr	○	♈	4 29	7 35	1 45	4 53	7 11	2 9
24	Sat	○	♉	4 29	7 35	2 21	4 53	7 12	2 54
25	Sun	○	♉	4 30	7 35	3 8	4 54	7 12	3 48
26	M	○	♊	4 30	7 35	sets	4 54	7 12	sets
27	Tu	○	♊	4 30	7 35	9 23	4 54	7 12	8 43
28	W	○	♋	4 29	7 35	10 8	4 55	7 12	9 35
29	Th	○	♋	4 29	7 35	10 42	4 55	7 12	10 18
30	Fr	○	♌	4 29	7 35	11 11	4 55	7 12	10 55
..	....	..	..	....	....	.....	....	....	.....

The World's Calendar for Wheat Harvests

In June the harvest begins in Turkey, Spain, Southern France, California, Tennessee, Virginia, Kentucky, Kansas, Utah and Missouri.

The modern self-binder is found throughout France, though the machines, as a rule, are operated with oxen.

The same is true of harvesting in Spain. All of these European countries but England have a duty on incoming grain, which makes the cost of flour higher than it would be if they could buy American products at American prices.

Weather Calendar

See Explanation on page 5.

1 — 4	Severe Storm Period.
5 — 8.	Local Showers.
9 — 11.	Very Warm.
12 — 15.	Severe Storms.
16 — 19.	Cooler.
20 — 23.	Hot Wave.
24 — 27	Storm Period Furious Winds in S. E.
28 — 30.	Milder and Fair.

Antidotes for Poison

First —Send for a physician.

Second —Induce vomiting by tickling throat with feather or finger; drinking hot water or strong mustard and water; swallow sweet-oil or whites of eggs.

Acids are antidotes for alkalies and vice versa.

For Poisoning from Opium, Laudanum, and Morphine.—An emetic should be followed by strong coffee or the white of an egg. Keep the patient walking for two or three hours.

For Poisoning from Arsenic, Corrosive Sublimate, Verdigris, Blue Vitriol, and Vegetables Kept in Copper Kettles.—Give an emetic and the white of an egg, sweet-oil and milk.

For Sugar of Lead Poisoning.—Give an emetic and Epsom salts.

For Poisoning from Hemlock, Aconite, Belladonna, and Fox-Glove.—After emetic give tannin and stimulants.

Strychnine.—First give an emetic, and then large dose of bromide of sodium (60 grains in solution). Repeat every hour until three or four doses have been taken.

Toadstool Poisoning.—Give emetics promptly, then castor oil and stimulants. Apply heat.

Poison Ivy or Oak.—There are three generally effective remedies for poison ivy or mercury. One is to apply hot water to the poisoned surface. Another is peroxide of hydrogen. The third is to apply a solution of sugar of lead, about 40 grains to a pound of water. Two other remedies that are more or less effective are baking soda and dry starch.

Building Suggestions for the Farmer

By J. E. Wing

The Grouping of Farm Buildings

There was a time not long ago when men took land, new, raw, and sought to make a living thereon. These men had little capital; stern economy made them "get along" as best they could. They built cheaply, their buildings placed as they happened. There was little or no regard for permanence, convenience, or, least of all, for beauty of form or arrangement.

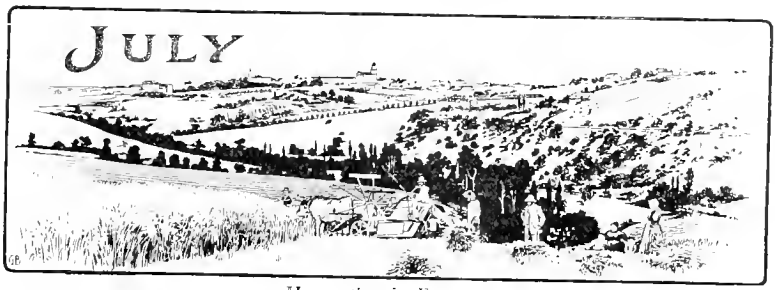
Let us outgrow that. "Farmin'" has become Agriculture. There is now no doubt as to whether it pays or not. Agriculture is very profitable now. Usually, farms pay best that have on them best buildings.

Let us now take a piece of land clear of buildings and consider how we would arrange it so as to be most convenient, sanitary, and beautiful. Some of us can begin new; some of us can rearrange old buildings.

The farmhouse should be well back from the highway. It should never be closer than 100 feet and it is best if it can be back 400 feet. Put it, if you can, on a little elevation overlooking the surrounding region. Usually I would not put the house away from the highway. There are large farms where it is well to get in the center but there is human interest in seeing the highway. Further, if you achieve aught in your planting and building you should share it with passers-by. There is true missionary work in doing that, and pleasure as well. We will not do things very well unless we feel that others see what we do.

The ideal farmer's home setting and lawn is to put the house in the midst of a little meadow of two to ten acres. This can be kept mown with the horse mower and will be a source of profit as well as beauty. It may be in timothy, Kentucky blue grass, or almost any sort of grass. It may be sown to alfalfa, except the parts near the house, which should be se-

[Continued on page 2-]



Harvesting in France

Moon's Phases	D.	Inter-Col. T. H.	M.	Eastern T. H.	M.	Central T. H.	M	Mountain T. H.	M.	Pacific T. H.	M
First Quarter	3	5	20	4	20	3	20	2	20	1	20
Full Moon	11	8	53	7	53	6	53	5	53	4	53
Last Quarter	19	1	31	0	31	11	31 18th	10	31 18th	9	31 18th
New Moon	25	4	12	3	12	2	12	1	12	0	12

Day of Mo	Day of Wk	Light and Dark Moon	Moon's Place	UNITED STATES — Northern States: Sun Rises H. M.	Sun Sets H. M.	Moon S. & R. H. M.	Southern States: Sun Rises H. M.	Sun Sets H. M.	Moon S. & R. H. M.
1	Sat		♍	4 32	7 35	11 35	4 56	7 12	11 27
2	Sun		♍	4 32	7 35	11 54	4 56	7 12	11 55
3	M		♍	4 33	7 34	morn	4 57	7 12	morn
4	Tu		♍	4 33	7 34	15	4 57	7 12	24
5	W		♍	4 34	7 34	35	4 58	7 11	52
6	Th		♍	4 35	7 34	47	4 58	7 11	1 11
7	Fr		♍	4 35	7 33	1 23	4 59	7 11	1 55
8	Sat		♍	4 36	7 33	1 53	4 59	7 11	2 31
9	Sun		♍	4 37	7 33	2 32	5 0	7 11	3 14
10	M		♎	4 37	7 32	3 20	5 0	7 10	4 3
11	Tu		♎	4 38	7 32	rises	5 1	7 10	rises
12	W		♎	4 39	7 31	8 58	5 1	7 10	8 22
13	Th		♎	4 39	7 31	9 27	5 2	7 9	8 58
14	Fr		♎	4 40	7 30	9 53	5 3	7 9	9 32
15	Sat		♎	4 41	7 30	10 15	5 3	7 9	10 2
16	Sun		♎	4 42	7 29	10 35	5 4	7 8	10 30
17	M		♏	4 43	7 29	10 57	5 4	7 8	11 0
18	Tu		♏	4 44	7 28	11 19	5 5	7 7	11 31
19	W		♏	4 44	7 27	11 45	5 6	7 7	morn
20	Th		♏	4 45	7 26	morn	5 6	7 6	6
21	Fr		♏	4 46	7 26	16	5 7	7 6	45
22	Sat		♏	4 47	7 25	56	5 8	7 5	1 33
23	Sun		♏	4 48	7 24	1 46	5 8	7 4	2 28
24	M		♐	4 48	7 23	2 53	5 9	7 4	3 36
25	Tu		♐	4 49	7 23	sets	5 10	7 3	sets
26	W		♐	4 50	7 22	8 38	5 10	7 3	8 9
27	Th		♐	4 51	7 21	9 9	5 11	7 2	8 49
28	Fr		♐	4 52	7 20	9 34	5 12	7 1	9 23
29	Sat		♑	4 53	7 19	9 57	5 12	7 0	9 55
30	Sun		♑	4 54	7 18	10 17	5 13	6 59	10 23
31	M		♑	4 55	7 17	10 38	5 14	6 59	10 52

The World's Calendar for Wheat Harvests

July is the harvest season in Roumania, Austro-Hungary, Southern Russia, Germany, Switzerland, France, Southern England, Oregon, Nebraska, Southern Minnesota, Wisconsin, Colorado, Washington, Iowa, Illinois, Indiana, Michigan, Ohio, New York, New England and Eastern Canada.

In Southern Russia camels and the small Russian ponies are used as draft animals, while in Roumania, France and Austro-Hungary oxen are largely used.

Next to America, Russia is the biggest exporter of wheat. The Russians themselves prefer bread and cakes made of rye flour

Weather Calendar

See Explanation on page 5

1 — 3	Fair.
4 — 7.	Local Showers
8—11.	Storm Period
12—16.	Fine Weather.
17—21	Storm Period.
22—25.	High Winds
26—28.	Fair.
29—31.	Storm Period

[Continued from page 26]

in blue grass. Trees may be planted in this meadow. They should not be irregularly scattered over it but should be planted with a definite plan, leaving a wide, open, unbroken expanse, with trees in clumps or fringes at the borders. The ideal lawn is a lake of grass with shores of trees and shrubs. This is both most beautiful and most economical, since there is no loss of the meadow land.

The drive to the house should follow such natural lines as one would take in driving from the front gate to and beyond the house. It is better if it is curving, but the curves should be placed with reason; and in the points about which the drive turns should stand trees or groups of shrubs that would indicate a reason for the curves. There should be two drives, one past the dwelling and on to the stables, the other direct from the highway to the barnyard. This last will need fencing, as animals will be driven through it.

The building of barns will of course depend much on the character of farming followed. I do not favor the building of large combined barns and stables to house all the animals of many classes, the tools and machines, the forage and grain, under one roof. Instead, I advise a stable for the horses, another apart from it for the dairy, if one is kept, though if only two or three cows are kept they can be sheltered in the horse stable or in a leanto at one side or end. As a rule, horses and cows should be separated. Horses are better off for abundant air and in cool or almost cold stabling. Cows giving milk also need abundant air but will not endure cold well or as low temperatures as make horses thrive. To get best results make these stables apart. An open yard, if possible paved with concrete made rough, should be provided for both cows and horses. Naturally, one cannot well have both classes of animals in the same yard.

Sheep require a shed by themselves. Sheep are better to have a very great flood of fresh air. They do not mind the cold at all. By all means give the sheep their own quarters. They need a yard, also. Better have it on the north side of the barn. There will be less mud there; the ground will remain frozen in winter. There will be shade there in summer.

Pigs are best off in a place by themselves. A permanent pigging house is good to have. Concrete the small yards in front of each pen.

Poultry need separate quarters. One does not wish fowls in the stable or on the hay. The carriage shed is a poor place for hens.

Then there is the tool shed. Make it at a very convenient point so that it is easy to drive through it and unhitch right there from the wagon, drill, mower, or corn planter. The simpler the tool shed is, the better, probably. A simple shed open at two sides with posts 10 feet apart; the shed about 30 feet wide and as long as you need is satisfactory. Have an upper story or half story with a bridge that can be let down. There you can place tools that will not be needed for months to come. The beauty of such a shed is that one can drive right through it crossways and leave any machine or wagon in place.

Now about grouping these buildings. It is not a simple thing to plan. Nor can one plan for any farm until he has seen it. A safe rule is to place buildings far enough apart so that should there come a fire, all will not be devoured.

Roofs of slate, tile, or metal will lessen the danger from fire. There is little economy in having buildings crowded together. Naturally the horse stable deserves a central and convenient place; the carriage house may abut the lawn. It should not be attached to the stable. If it is, there should be a close partition dividing it from the stables, else the odors of ammonia will fill the carriage robes. If a dairy is kept, the milk should

[Continued on page 30]

Harvesting in Western Canada

Moon's Phases	D.	Inter-Col. T. H.	M.	Eastern T. H.	M.	Central T. H.	M.	Mountain T. H.	M.	Pacific T. H.	M.
First Quarter	1	7	29	6	29	5	29	4	29	3	29
Full Moon	9	10	54	9	54	8	54	7	54	6	54
Last Quarter	17	8	10	7	10	6	10	5	10	4	10
New Moon	23	0	14 24th	11	14	10	14	9	14	8	14
First Quarter	31	2	20	1	20	0	20	11	20 30th	10	20 30th

Day of Mo.	Day of Wk.	Light and Dark Moon	Moon's Place	UNITED STATES Northern States Sun Rises H. M.	Sun Sets H. M.	Moon S. & R. H. M.	Southern States Sun Rises H. M.	Sun Sets H. M.	Moon S. & R. H. M.
1	Tu		♑	4 56	7 16	11 0	5 14	6 58	11 22
2	W		♑	4 57	7 14	11 25	5 15	6 57	11 54
3	Th		♒	4 58	7 13	11 54	5 16	6 56	morn
4	Fr		♒	4 59	7 12	morn	5 16	6 55	30
5	Sat		♒	5 0	7 10	20	5 17	6 54	1 10
6	Sun		♓	5 1	7 9	1 15	5 18	6 53	1 58
7	M		♓	5 2	7 7	2 6	5 18	6 52	2 40
8	Tu		♈	5 3	7 6	3 5	5 19	6 51	3 45
9	W		♈	5 4	7 5	rises	5 20	6 50	rises
10	Th		♈	5 5	7 4	7 57	5 21	6 49	7 33
11	Fr		♉	5 6	7 2	8 21	5 21	6 48	8 5
12	Sat		♉	5 7	7 1	8 42	5 22	6 47	8 34
13	Sun		♉	5 8	7 0	9 2	5 22	6 46	9 3
14	M		♊	5 9	6 58	9 23	5 23	6 45	9 33
15	Tu		♊	5 10	6 57	9 51	5 24	6 44	10 9
16	W		♊	5 11	6 55	10 15	5 25	6 43	10 42
17	Th		♋	5 12	6 54	10 51	5 25	6 42	11 26
18	Fr		♋	5 13	6 53	11 36	5 26	6 41	morn
19	Sat		♋	5 14	6 51	morn	5 27	6 40	17
20	Sun		♌	5 15	6 50	33	5 27	6 39	1 17
21	M		♌	5 16	6 48	1 42	5 28	6 37	2 24
22	Tu		♌	5 17	6 47	2 59	5 29	6 36	3 35
23	W		♍	5 17	6 45	4 7	5 29	6 35	4 35
24	Th		♍	5 18	6 44	sets	5 30	6 34	sets
25	Fr		♍	5 19	6 42	7 57	5 31	6 33	7 51
26	Sat		♎	5 20	6 41	8 18	5 31	6 31	8 21
27	Sun		♎	5 21	6 39	8 40	5 32	6 30	8 51
28	M		♎	5 22	6 37	9 1	5 33	6 29	9 20
29	Tu		♏	5 23	6 36	9 24	5 33	6 28	9 51
30	W		♏	5 24	6 35	9 52	5 34	6 26	10 26
31	Th		♎	5 25	6 34	10 25	5 35	6 25	11 5

The World's Calendar for Wheat Harvests

August is the harvest month in Holland, Belgium, Great Britain, Denmark, Poland, Western Canada and the Dakotas.

Western Canada has been called the "Bread Basket of the World."

The recent introduction of quickly ripening, hardy wheat from Siberia has opened up thousands of acres of Canadian northland hitherto thought worthless.

Weather Calendar

See Explanation on page 5

1— 4. Continued Storm Period.
5— 8. Clear and Sultry.
9—13. Showery Period.
14—17. Pleasant Period.
18—21. Sultry.
22—25. General Storm Period.
26—29. Fair. Showers on 29th.
30—31. Storms in the West.

[Continued from page 28]

not be very far from the dairy room. Overhead trolleys will convey this milk from the stable to the dairy building, such an arrangement is used by enterprising dairymen. The sheep may as well be farther back. The pig pens should not be where prevailing winds will carry their odor to the dwellings. Even clean pig pens have an odor. The poultry house will be well located in the orchard, convenient of access for the housewife, who naturally will be much interested in its career.

[Continued on page 32]

For the Housewife

Cooking Time Table

For Baking

Meats

	Time in oven.
Mutton, leg, per pound	10 to 15 min
Beef ribs, per pound	8 to 15 "
Round of beef, per pound	12 to 15 "
Lamb, well done, per pound	15 "
Pork, well done, per pound	20 "
Veal, well done, per pound	18 to 20 "
Mutton, shoulder, stuffed, per pound	15 "
Venison, rare, per pound	10 "
Goose, per pound	18 "
Chicken, per pound	15 "
Turkey	1¾ to 3 hours
Birds, small (hot oven)	15 to 20 min
Ducks, wild (very hot oven)	15 "
Ducks, tame	45 "
Partridge	35 to 40 "
Bread	1 hour
Custard (very slow oven)	1 "
Biscuits	20 to 25 "
Cakes	20 to 45 "

For Broiling

Meats

Mutton chops	8 to 10 min.
Grouse	15 "
Quail	8 to 10 "
Steak, 1½ inches thick	10 to 15 "
Steak, 1 inch thick	8 to 10 "
Spring chicken	20 "
Squab	10 to 15 "

For Baking

Fish

	Time in oven.
Shad	15 to 25 min.
Trout	15 to 25 "
Bluefish	15 to 25 "
Small fish	5 to 10 "

For Boiling

Vegetables

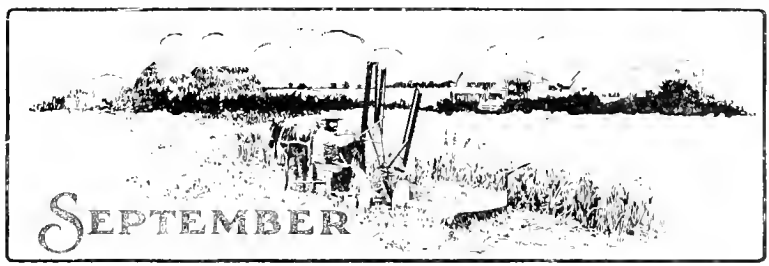
Peas	15 to 20 min.
Spinach	15 to 20 "
Lima beans	35 to 40 "
String beans	20 to 30 "
Potatoes	20 to 30 "
Asparagus	20 to 25 "
Brussels sprouts	10 to 15 "
Green corn	20 to 25 "
Onions	30 to 40 "
Parsnips	30 to 40 "
Rice	15 to 20 "
Turnips	30 "
Beets	30 min. or more
Cauliflower	20 min
Cabbage	20 "
Macaroni	20 "

Meats

Mutton, per pound	15 min.
Ham, per pound	20 "
Chicken, per pound	15 "
Turkey, per pound	15 "
Corned beef, per pound	30 "
Fowl, per pound	20 to 30 "
Tripe, per pound	3 to 5 hours

Fish

Halibut, per pound	15 min
Bluefish, per pound	10 "
Bass, per pound	10 "
Codfish, per pound	6 "
Haddock, per pound	6 "
Salmon, per pound	10 to 15 "
Small fish, per pound	6 "
Lobster	30 to 45 "



Harvesting in Siberia

Moon's Phases	D	Inter-Col. T. H.	M.	Eastern T. H	M.	Central T. H.	M	Mountain T. H.	M.	Pacific T. H	M
Full Moon	8	11	56	10	56	9	56	8	56	7	56
Last Quarter	15	1	50	0	50	11	50	10	50	9	50
New Moon	22	10	37	9	37	8	37	7	37	6	37
First Quarter	30	7	08	6	08	5	8	4	8	3	8

Day of Mo.	Day of Wk.	Light and Dark Moon	Moon's Place	UNITED STATES Northern States Sun Rises H. M.	Sun Sets H. M.	Moon S. & R H. M	Southern States Sun Rises M. H	Sun Sets H. M	Moon S. & R H. M
1	Fr	☽	♏	5 20	6 33	11 7	5 35	6 24	11 50
2	Sat	☽	♐	5 27	6 31	11 57	5 36	6 23	morn
3	Sun	☽	♐	5 28	6 29	morn	5 37	6 21	41
4	M	☽	♑	5 29	6 28	53	5 37	6 20	1 35
5	Tu	☽	♑	5 32	6 26	1 57	5 38	6 19	2 34
6	W	☽	♒	5 31	6 25	3 1	5 39	6 17	3 32
7	Th	☽	♒	5 32	6 23	4 11	5 39	6 16	4 33
8	Fr	☽	♓	5 33	6 21	rises	5 40	6 15	rises
9	Sat	☽	♓	5 34	6 20	7 7	5 40	6 13	7 5
10	Sun	☽	♈	5 35	6 18	7 28	5 41	6 12	7 35
11	M	☽	♈	5 36	6 16	7 52	5 42	6 11	8 8
12	Tu	☽	♉	5 37	6 15	8 18	5 42	6 9	8 43
13	W	☽	♉	5 38	6 13	8 50	5 43	6 8	9 23
14	Th	☽	♊	5 39	6 11	9 32	5 43	6 6	10 12
15	Fr	☽	♊	5 40	6 9	10 24	5 44	6 5	11 8
16	Sat	☽	♋	5 41	6 8	11 29	5 45	6 4	morn
17	Sun	☽	♋	5 42	6 6	morn	5 46	6 3	12
18	M	☽	♌	5 43	6 4	40	5 46	6 1	1 19
19	Tu	☽	♌	5 44	6 3	1 55	5 47	6 0	2 27
20	W	☽	♍	5 45	6 1	3 12	5 48	5 58	3 35
21	Th	☽	♍	5 46	5 59	4 26	5 48	5 57	4 40
22	Fr	☽	♎	5 47	5 58	sets	5 49	5 56	sets
23	Sat	☽	♎	5 48	5 56	6 41	5 50	5 54	6 49
24	Sun	☽	♎	5 49	5 54	7 2	5 50	5 53	7 18
25	M	☽	♏	5 50	5 53	7 25	5 51	5 52	7 49
26	Tu	☽	♏	5 51	5 52	7 51	5 52	5 50	8 22
27	W	☽	♏	5 52	5 50	8 22	5 52	5 49	9 0
28	Th	☽	♐	5 53	5 48	9 1	5 53	5 48	9 43
29	Fr	☽	♐	5 54	5 46	9 46	5 54	5 46	10 32
30	Sat	☽	♑	5 54	5 44	10 41	5 55	5 46	11 24

The World's Calendar for Wheat Harvests

In September harvest is on in Scotland, Sweden, Norway, Northern Russia and Siberia, and continues into October.

These countries of the frozen north, as we are apt to consider them, are users of a large number of American made harvesting machines.

Weather Calendar

See Explanation on page 5.

1	3	Storm Period.
4	8	Very Pleasant
9	12	Storms in West.
13	16	Storms in East.
17	20	Cool and Fair.
21	26	Great Storm Period Danger.
27		Cool Period

[Continued from page 30]

Concrete and Cobblestones for Stables and Walls

Where stones abound they make beautiful walls. Lay them in forms made about 12 inches wide, the stones next the outer face; throw wet concrete back of the stones and agitate it with sticks till it flows in between them. Thus a pleasure wall can be built at a trifling cost.

Herewith is shown a picture of a stable, the lower walls of which are built of concrete and cobble stones.

The lower portion of the walls of this stable is of concrete and cobblestones

A Novel Corn Crib

Corn is worth saving nowadays. The days of piling it on the ground or throwing it in rail pens, unprotected, are over, or should be over. Corn is too precious to feed to rats. We present here a simple corn crib designed by an Ohio farmer and built quite commonly in his neighborhood. It is nearly perfect, since it is rat proof, keeps corn well — better in fact than any other crib — is very easily and rapidly built, needs really no carpenter, and is the cheapest possible form of corn crib.

Photograph of a novel corn crib — On the farm of J. E. Wing

Get at the tin shop eight cylinders of galvanized iron, each one 24 inches long and 8 inches in diameter at the end. You can have them tapered at one end if you wish. These are the eight legs or piers on which the crib rests and are filled with concrete. Get one cylinder of same length, 12 inches in diameter, for the middle pier. Lay off the places for the piers, according to the size you wish the crib. For Ohio and Indiana a crib 12 feet in diameter is wide enough, with a central air shaft it may be indefinitely larger. Excavate to sound earth under each pier a hole 20 inches square, fill the excavation with concrete to the surface of the ground, set up your galvanized iron cylinders, place them at exactly the same level, then fill with concrete. On these rest the 2x12-inch sills of the floor. Lay these across each other like spokes of a wheel, and put "trimmers" across at their ends and intermediate

[Continued on page 34]

Harvesting in Sweden

Moon's Phases	D.	Inter-Col. T. H. M.	Eastern T. H. M.	Central T. H. M.	Mountain T. H. M.	Pacific T. H. M.
Full Moon	7	6 11 8th	11 11	10 11	9 11	8 11
Last Quarter	14	7 46	6 46	5 46	4 46	3 46
New Moon	21	9 22d	11 9	10 9	9 9	8 9
First Quarter	30	2 41	1 41	0 41	11 41 29th	10 41 29th

Day of Mo.	Day of Wk.	Light and Dark Moon	Moon's Place	UNITED STATES Northern States Sun Rises H. M.	Sun Sets H. M.	Moon S. & R. H. M.	Southern States Sun Rises H. M.	Sun Sets H. M.	Moon S. & R. H. M.
1	Sun		♈	5 56	5 43	11 40	5 55	5 45	morn
2	M		♈	5 57	5 41	morn	5 56	5 43	20
3	Tu		♉	5 58	5 39	45	5 56	5 41	1 19
4	W		♉	5 59	5 38	1 52	5 57	5 40	2 19
5	Th		♊	6 0	5 36	3 1	5 58	5 39	3 19
6	Fr		♊	6 1	5 35	4 9	5 58	5 37	4 19
7	Sat		♋	6 2	5 33	5 18	5 59	5 36	5 19
8	Sun		♋	6 3	5 31	rises	6 0	5 35	rises
9	M		♋	6 4	5 30	6 20	6 1	5 33	6 42
10	Tu		♌	6 5	5 28	6 51	6 1	5 32	7 22
11	W		♌	6 7	5 27	7 31	6 2	5 31	8 9
12	Th		♌	6 8	5 25	8 20	6 3	5 30	9 3
13	Fr		♍	6 9	5 23	9 20	6 4	5 29	10 5
14	Sat		♍	6 10	5 22	10 29	6 4	5 27	11 10
15	Sun		♎	6 11	5 20	11 43	6 5	5 26	morn
16	M		♎	6 12	5 19	morn	6 6	5 25	18
17	Tu		♎	6 13	5 17	58	6 7	5 24	1 25
18	W		♏	6 14	5 16	2 11	6 7	5 23	2 29
19	Th		♏	6 15	5 14	3 19	6 8	5 22	3 28
20	Fr		♏	6 16	5 13	4 30	6 9	5 20	4 30
21	Sat		♐	6 18	5 12	5 36	6 10	5 19	5 28
22	Sun		♐	6 19	5 10	sets	6 11	5 18	sets
23	M		♑	6 20	5 9	5 53	6 11	5 17	6 21
24	Tu		♑	6 21	5 7	6 22	6 12	5 16	6 57
25	W		♑	6 22	5 6	6 55	6 13	5 15	7 36
26	Th		♑	6 23	5 4	7 39	6 14	5 14	8 23
27	Fr		♒	6 24	5 3	8 28	6 15	5 13	9 13
28	Sat		♒	6 26	5 2	9 26	6 16	5 12	10 8
29	Sun		♓	6 27	5 1	10 29	6 16	5 11	11 6
30	M		♓	6 28	4 59	11 35	6 17	5 10	morn
31	Tu		♓	6 29	4 58	morn	6 18	5 0	5

The World's Calendar for Wheat Harvests

The harvest which began in September is continued during October throughout Sweden, Norway, and Northern Russia.

In these countries a large part of the harvesting work is done by women. They often develop the strength of men, but the continuous hard work ages them early in life.

Weather Calendar

See Explanation on page 5.

1— 5.	Pleasant Period.
6— 9.	Storm Period.
10— 12.	Local Showers. Frosts in low places.
13—18.	Generally Pleasant.
19—22.	Storm Period.
23—24.	Fair.
25—27	Sharp Storms.
28—31	Thunder and Hail Storms.

[Continued from page 32]

joists 2x6 inches for the floor; thus, counting the joists there are sixteen spokes in your wheel. Now lay down a floor. Don't make it tight. Cracks an inch wide will make the corn keep all the better. You can cover the cracks if you wish with woven wire to hold shelled corn. Or pigs and poultry may be depended on to eat the corn that drops through.

Next you need five hoops of the same diameter as your foundation. One rests on the bottom, and the floor is nailed to it, the ends of the sills being notched down four inches to receive it. Three of the other four hoops are the nail girts for siding and one is the plate for the roof. These hoops may be built up of 1x4-inch stuff, preferably ½ inch thick and of green wood. A circle of stakes is driven in the ground and the hoops made by bending green wood around it and nailing well together. If no green wood can be had one can take pine, soak it in water, and with care bend it in place. Set all the hoops on the foundation, set up some of the siding, which may be of 1x6-inch sheeting, 10 or 12 feet long. Nail the bottom ends of some of the siding, then lift up all the hoops, nail in place the first one above the floor, then lift the remaining ones; nail in place the second one above the floor, then the third; then the top one or plate. Put on all the siding and nail it well. That is all there is to the building,—siding, hoops, floor, roof. There is no frame, no studding, no rafters. But don't fail to put on diagonal braces, well nailed, of 1x4-inch stuff, in two directions, from floor to plate.

Now for the roof: make it by taking 1x12-inch boards, ripping them from one corner diagonally to the opposite corner. Put them up with the points together. Give a 24-inch projection to the roof. Shingle on the boards. Use a line fastened to the peak, with pencil, to line for shingles in circular course. It is the cheapest crib in the world, and in some ways the best, for it is rat and mouse proof.

Set up slatted air shaft in center. If you make this crib of large diameter, say 20 feet, make the air shaft larger in proportion.

Farm Power

By Charles Edward Lucke, M. E., Ph. D., Professor of Mechanical Engineering, Columbia University, New York City

One of the greatest discoveries, measured by its effects, that the world has ever seen, was the determination that the heat of burning fuel could be made to do useful work and replace the labor of man and beast. Of course, the mere abstract possibility of securing work from burning fuel, while great in a purely scientific way, is as nothing in practical value to the actual realization of the possibility by engineers. To design machines to carry out with gases and vapors a series of processes, such as heating and cooling, evaporation and condensation, compression and expansion, in suitable order and degree, always beginning with the heat of burning fuel and ending with rotating shapes, required a degree of skill, patience and perseverance that can be scarcely overestimated, and the results of this work as exemplified by our power machinery are to-day almost immeasurable. This machinery for generating power from fuel has actually created the great modern industries of manufacturing and transportation, and as a consequence has exerted a powerful influence on the lives and prospects of the people of civilized countries who first created and then used it. It requires but a moment's thought to realize that no car or ship could be moved in a way equal to modern demands without the steam or gas engine, burning either solid or liquid fuel, nor could all the articles of common use entering into our clothing and housing be produced in suitable quantity, quality or variety without machinery driven by similar engines; nor, finally, would it be possible to supply our tables with the foods and

[Continued on page 36]

NOVEMBER

Harvesting in Peru

Moon's Phases	D	Inter-Col. T. H.	M.	Eastern T. H.	M.	Central T. H.	M.	Mountain T. H.	M.	Pacific T. H.	M.
Full Moon	6	11	48	10	48	9	48	8	48	7	48
Last Quarter	13	3	19	2	19	1	19	0	19	11	19 12th
New Moon	20	4	49	3	49	2	49	1	49	0	49
First Quarter	28	9	42	8	42	7	42	6	42	5	42

Day of Mo.	Day of Wk.	Light and Dark Moon	Moon's Place	UNITED STATES Northern States Sun Rises H. M.	Sun Sets H. M.	Moon S. & R. H. M.	Southern States Sun Rises H. M.	Sun Sets H. M.	Moon S. & R. H. M.
1	W	☽	♒	6 30	4 57	41	6 19	5 9	1 3
2	Th	☽	♒	6 31	4 56	1 48	6 20	5 8	2 2
3	Fr	☽	♓	6 32	4 54	2 56	6 21	5 7	3 1
4	Sat	☽	♓	6 34	4 53	4 5	6 22	5 6	4 2
5	Sun	☽	♈	6 35	4 52	5 15	6 23	5 5	5 5
6	M	☽	♈	6 36	4 51	rises	6 23	5 4	rises
7	Tu	☽	♉	6 37	4 50	5 26	6 24	5 4	6 1
8	W	☽	♉	6 38	4 49	6 12	6 25	5 3	6 54
9	Th	☽	♊	6 40	4 48	7 11	6 26	5 2	7 56
10	Fr	☽	♊	6 41	4 47	8 18	6 27	5 2	9 1
11	Sat	☽	♋	6 42	4 46	9 33	6 28	5 1	10 10
12	Sun	☽	♋	6 43	4 45	10 48	6 29	5 0	11 17
13	M	☽	♋	6 44	4 44	morn	6 30	5 0	morn
14	Tu	☾	♌	6 46	4 43	2	6 31	4 59	22
15	W	☾	♌	6 47	4 42	1 13	6 31	4 58	1 24
16	Th	☾	♍	6 48	4 41	2 19	6 32	4 58	2 22
17	Fr	☾	♍	6 49	4 40	3 26	6 33	4 57	3 21
18	Sat	☾	♎	6 50	4 39	4 32	6 34	4 57	4 18
19	Sun	☾	♎	6 51	4 38	5 39	6 35	4 57	5 17
20	M	☾	♎	6 53	4 38	6 44	6 36	4 56	6 15
21	Tu	☾	♏	6 54	4 37	sets	6 37	4 56	sets
22	W	☾	♏	6 55	4 36	5 34	6 38	4 55	6 17
23	Th	☾	♐	6 56	4 36	6 21	6 39	4 55	7 6
24	Fr	☾	♐	6 57	4 35	7 17	6 40	4 55	8 0
25	Sat	☾	♑	6 58	4 35	8 17	6 41	5 55	8 56
26	Sun	☾	♑	6 59	4 35	9 21	6 41	4 54	9 54
27	M	☾	♑	7 0	4 34	10 24	6 42	4 54	10 49
28	Tu	☽	♒	7 2	4 34	11 33	6 43	4 54	11 50
29	W	☽	♒	7 3	4 34	morn	6 44	4 54	morn
30	Th	☽	♒	7 4	4 34	37	6 45	4 54	46

The World's Calendar for Wheat Harvests

November is the harvest month in Peru and South Africa. Peru grows only a small amount of grain.

The American made machines are often drawn by a long-necked animal called the llama, which was the only animal domesticated by the South American Indians. It was used in agriculture by the Peruvians before the discovery of America.

Weather Calendar

See Explanation on page 5.

1 — 6. Fair Period.
7 — 10. Local Storms.
11 — 14. Storm Period.
15 — 18. Soliterraneous Storm Period.
19 — 22. Cloudy and Very High Wind.
23 — 26. Storm Period.
27 — 30. Fair and Cold.

[Continued from page 34]

beverages we now enjoy and regard as necessities of comfortable living, without similar assistance. Obvious as these things are on reflection, and proving as they do the dependence of modern civilized living on the use of nature's stores of fuel energy through the medium of power machinery, it is equally true, though not so clearly seen, that many of our common institutions of commercial, financial, sociologic, and economic nature owe their existence to the same causal influence. It can be shown with reasonable certainty that no single formative force has been so powerful as this in the development of society as it now exists from its earlier and simpler predecessor when the majority of the people were farmers.

No matter what changes may take place in the relation of man to man or in the individual life of each family, it is a truism that all must be fed, and the bulk of the food of the world must come from the farms; so that while one after another new occupations for men and women may be created and new class distinctions drawn, there always has been and always must be a farmer class large and fundamentally important to the mere existence of the rest. In fact, as the proportion of farm producing population to the whole becomes less, so do those remaining on the farm become more essential to those that have left it; and the former are face to face at once with greater opportunities and greater responsibilities to feed with fewer hands the increasing millions that produce no food themselves.

The use of power machinery is not only responsible for the creation and development of the manufacturing and transportation industries as they now exist, and all within the last century and a half, but there has also simultaneously resulted a change in occupation of a large part of the population, and to some extent in the mode of living of all. How then while these colossal social and industrial readjustments were taking place—more intense and more general than have ever been produced by all the wars and politics of the world—how has the original and fundamental industry of farming been effected, and what has power machinery done to assist in the production of the world's food supply? Practically nothing, measured by the effects in the other fields; though a movement in this direction is now becoming sufficiently general to warrant recognition and prompt some thought as to the possible effects should it continue.

There are two general classes of machinery—the first a development of the common tools by which parts of metal and wood are used to assist the fingers, as for example, in the simple loom, and which by the addition of further parts to practically eliminate hand and eye, becomes the power loom, on which among other things is a wheel or shaft that must be turned, and when turned, cloth is woven without any other assistance from operators. This class of machine may be termed "driven," and is characterized by the fact that by the push or pull of man or beast applied to the mechanism, something, formerly done entirely by skill, is accomplished, and faster and better than it was done without it. The elements of skill and human intelligence being eliminated, unskilled men, horses, wind mills, or water wheels may be substituted, thus practically freeing the intelligent man entirely from gross labor and allowing that freer play of his thinking faculties that is possible only when relieved of bodily fatigue. The second class of machinery is intended to entirely replace the horse by the substitution of the energy of nature in one of its forms—fuel, wind, or falling water; the most generally available of which by long odds is fuel. This class of machinery burning fuel accomplishes the push, pull, or turn required by the first class, and may properly be called power generating machinery. Historically, the driven machine in one form

[Continued on page 38]

DECEMBER

Harvesting in Australia

Moon's Phases	D.	Inter-Col. T. H.	M.	Eastern T. H.	M.	Central T. H.	M.	Mountain T. H.	M.	Pacific T. H.	M.
Full Moon	5	10	52	9	52	8	52	7	52	6	52
Last Quarter	12	1	45	0	45	11	45	10	45	9	45
New Moon	20	11	40	10	40	9	40	8	40	7	40
First Quarter	28	2	47	1	47	0	47	11	47	10	47

Day of Mo.	Day of Wk.	Light and Dark Moon	Moon's Place	UNITED STATES Northern States Sun Rises H. M.	Sun Sets H. M.	Moon S. & R. H. M.	Southern States Sun Rises H. M.	Sun Sets H. M.	Moon S. & R. H. M.
1	Fr	☽	♑	7 05	4 34	1 44	6 46	4 54	1 45
2	Sat	☽	♑	7 6	4 33	2 53	6 47	4 54	2 45
3	Sun	☽	♒	7 7	4 33	4 5	6 47	4 54	3 48
4	M	☽	♒	7 8	4 33	5 22	6 48	4 54	4 56
5	Tu	☽	♓	7 9	4 32	6 41	6 49	4 54	6 7
6	W	☽	♓	7 10	4 32	rises	6 50	4 54	rises
7	Th	☽	♈	7 11	4 32	6 0	6 51	4 54	6 44
8	Fr	☽	♈	7 12	4 32	7 16	6 51	4 54	7 55
9	Sat	☽	♉	7 13	4 32	8 34	6 52	4 54	9 6
10	Sun	☽	♉	7 14	4 32	9 50	6 53	4 55	10 13
11	M	☽	♊	7 15	4 32	11 3	6 53	4 55	11 17
12	Tu		♊	7 15	4 32	morn	6 54	4 56	morn
13	W		♋	7 16	4 33	11	6 55	4 56	17
14	Th		♋	7 16	4 33	1 17	6 55	4 56	1 14
15	Fr		♌	7 17	4 33	2 24	6 56	4 56	2 13
16	Sat		♌	7 18	4 33	3 30	6 57	4 57	3 11
17	Sun		♍	7 18	4 33	4 30	6 57	4 57	4 9
18	M		♍	7 19	4 34	5 41	6 58	4 57	5 7
19	Tu		♎	7 20	4 34	6 45	6 58	4 58	6 5
20	W		♎	7 20	4 35	7 44	6 59	4 58	7 1
21	Th	☾	♏	7 21	4 35	sets	6 59	4 59	sets
22	Fr	☾	♏	7 21	4 36	6 9	7 0	4 59	6 49
23	Sat	☾	♐	7 22	4 37	7 13	7 0	5 0	7 47
24	Sun	☾	♐	7 22	4 37	8 18	7 1	5 0	8 45
25	M	☾	♒	7 23	4 38	9 21	7 1	5 1	9 41
26	Tu	☾	♒	7 23	4 39	10 25	7 1	5 1	10 37
27	W	☾	♒	7 23	4 39	11 30	7 2	5 2	11 34
28	Th	☾	♓	7 23	4 40	morn	7 2	5 3	morn
29	Fr	☾	♓	7 24	4 40	34	7 3	5 3	32
30	Sat	☾	♈	7 24	4 41	1 43	7 3	5 4	1 30
31	Sun	☾	♈	7 24	4 42	2 50	7 3	5 5	2 34

The World's Calendar for Wheat Harvests

In December the harvest season begins in the Argentine Republic, Uruguay and Australia.

The Argentine harvest is continued well into the month of January.

Australia offers a good market for American harvesting machines. Owing to the scarcity of native hay, a large per cent of the grain sown is cut with binders and mowers when green and used as hay. This harvest occurs in October. As grain, the crop is harvested in December.

Weather Calendar

See Explanation on page 5.

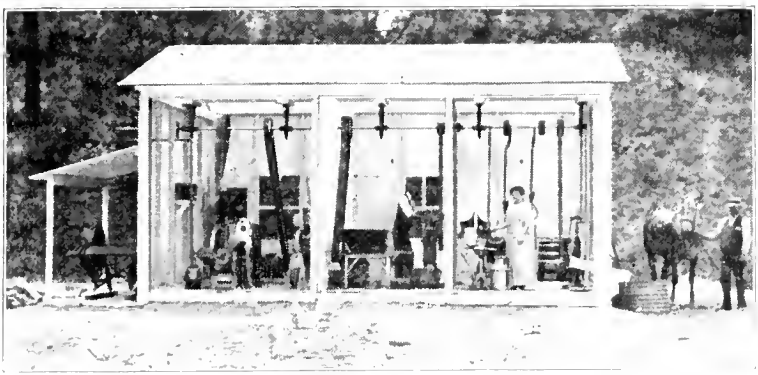
1— 3. Continued Fair and Cold.
4— 8. Warmer and Storm Period.
9—12. Colder and Stormy.
13—16. Storm Period
17—21. Fair & High Wind.
22—26. Milder and Local Showers or Snow Flurries.
27—31. Severe Storm Period.

or another preceded the power generating machine or engine, and this is quite natural, as there could be no use for the latter without something to do such as is required by the former. Really great results are accomplished and correspondingly noteworthy effects only when these are brought together. Some early driven machines were the pump, forge bellows, drop hammer, plow, churn, spinning wheel, potter's wheel, turning lathe — all operated at first by men and women; later, by beasts, still later, by wind or water mills where convenient, or where the people were intelligent enough. Many of these have been in use for thousands of years, while power driven machinery is all of comparatively recent date.

Up to about 1760, nothing beyond this sort of driven machinery was in existence, and the people using it were farmers or dwellers in small towns associated closely with farming. These constituted the greater part of the population, the rest consisting of soldiers, clergy, police, government officials, land owners, and some traders, with but few mechanics, and no factory workers. About this time two things happened that are worth tracing briefly. Together they changed the whole outlook on life possibilities. First, a series of improvements, by a dozen different men, in spinning and weaving machinery, making the machines more complicated and requiring power to drive them, but greatly increasing the productivity of the attendant when the power became available, and almost unbelievably improving the quality of thread and cloth. This was almost immediately followed by the perfection of the steam engine by the now famous James Watt, who, by burning coal in a boiler, thereby provided means to drive these machines as they needed to be driven, thus relieving attendants and operators of the hard labor and making possible the factory in which production could be multiplied to an almost unlimited degree. In fact, it was only a short time before hand spinning in the farm home ceased, and only a minute fraction of those who formerly spun and wove to clothe themselves sufficed in the new English factories to produce cloth for the whole world.

Following the demonstration of the economy and perfection of machine methods of doing things and the enormous power possibilities of fuel burning steam engines, machines began to appear and are still being designed and invented to do every conceivable thing and many that were believed to be impossible. The engines themselves, while in the beginning practically all the same, were gradually changed in form to suit the driven machine, so that to-day we have one type of steam engine for pumping water, another for generating electric light, and still others for locomotives and boats. Not only has the steam engine been adapted in form to suit its work, but the internal combustion engine, burning within its working cylinder explosive mixtures of gaseous fuel or vapors of liquid fuel with air, has appeared to satisfy at once the demand for small cheap engines economical in spite of intermittent service and thoroughly portable and self-contained. Ever new types and systems of power generating machinery, and machines for doing things that may be driven by the former constantly appear and without a shadow of doubt will continue to appear, becoming more and more perfect as time goes on. Which of all these machines, in this age of machinery, have contributed to the farmer's relief and the promotion of the farming industry as in other lines to permit of the suitable multiplication of the product of the man on the farm? The horse drawn plow was a step above the woman hauled plow; the horse drawn cultivator an advance over the hoe; the reaper, mower, and binder successive advances over the sickle and scythe; the grain drill and seeder over hand planting; but, in no instance was there any relief from muscular power till the steam engine was applied to the driving of the threshing machine and separator.

For reasons that are often a subject of speculation, this point in the progress of machine farming was not reached till nearly a century after



An I H C Engine installed to provide a practical Farm Power House

the same stage in the manufacturing industry, and still more strange it is that practically no advance toward the more general use of power on the farm was made until the present time, after one whole generation of stationary conditions.

At the present time experiments are under way looking toward the powering of the now manifold horse and hand operated farm machines, and in spite of the predictions of failure with which each new attempt is met, there can be no doubt, in the light of machine and power history that success will be attained. Even at the present time our papers are full of stories of the successes of the new gasoline and kerosene traction engines as plow haulers and general service self-moving power plants capable of economies and service unheard of five years ago. No student of industrial history can for a moment doubt that the future farm will be amply powered, and human drudgery relieved to permit of the exercise of the farmer's thinking capacity instead of his muscles.

If industrial history is any guide whatsoever, the farming of the future is destined to be just as difficult, scientific, and systematic a process as manufacturing, and one in which mental capacity will displace physical strength, power in one of its various forms displace the horse, and the effort of man be turned to the guidance of machines and toward a study of methods and processes.

Reasonable doubt there may be as to the time when, or how completely such substitutions will take place or when the methods of manufacturing in farming will displace the old, individual effort system; yet there can be no doubt that the improvement has started, that it is attracting the attention and will enlist the assistance of our best engineers and scientists who have up to this time been establishing and maintaining the other more complicated machine industries, and that, with such a promising beginning and fund of experience to work upon, forward strides will be made that will serve to characterize this as an historical epoch.

Assuming for the moment that power machinery will be extensively used in farming, what effect will it have in the long run as compared to the effect of the creation of power machine manufacturing and transportation? There must result something similar in kind though perhaps less in degree, for the primary effect of displacing human labor by power machines is to increase the productivity of the man and improve its quality. Less men are needed to produce the same or even more than before; those no longer needed may take up other occupations more suited to their mental capacity, their tastes or other personal character

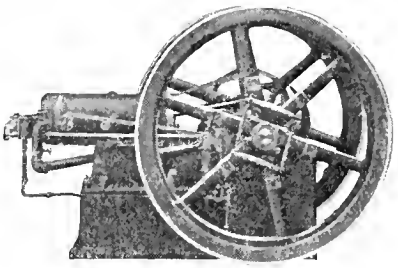
istics; even for those that remain there will be a change, for the machine methods lead to a division of labor. There will always be some drudgery to do, and this will be left to those mentally unfit to guide machines, while those more richly endowed will find suitable occupations in the management of men, the study of soils, plant and animal life, and the most economic methods to be employed to secure ample crops or suitable stock, or, in the management of what will then have become a technical business enterprise. Just as early manufacturing tended to create the city at the expense of the farm by drawing away the laborers to the neighborhood of the factory, so may the possibilities of manufacturing farming be expected to result in a new readjustment of population.

Farming will cease to be the occupation of the poorly educated, and the city the sole opportunity of the great thinkers; the same division of labor and mental effort will apply to both, and both country and city dweller will be on a similar plane; or, rather, the same series of levels will apply to both; each will have its captains of industry, its cultured class, and each will have its servant and laborer class with all grades between, and no barrier to the passage from the lowest to the highest in either city or country, except personal fitness to do the next higher thing needed by the community.

Power on the Farm

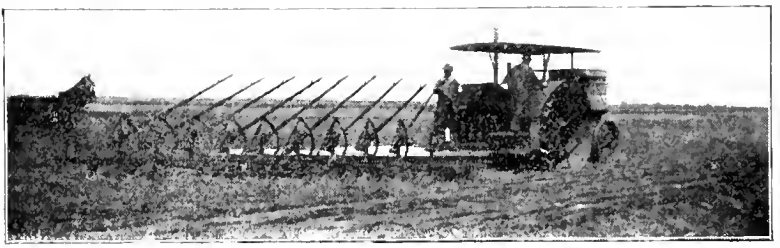
The best farm power is gasoline engine power. This power is so readily accessible at all times, so clean, requires so little attention, and causes so little worry that it has come to be known as "the best hired man" for every farmer.

The immense popularity of the I H C gasoline engine for farm use is unquestionable—due to its reliability, simplicity, and economical fuel consumption. It is so simple in design and operation that with a few instructions and a little practice even the boys are able to start and stop the engine.



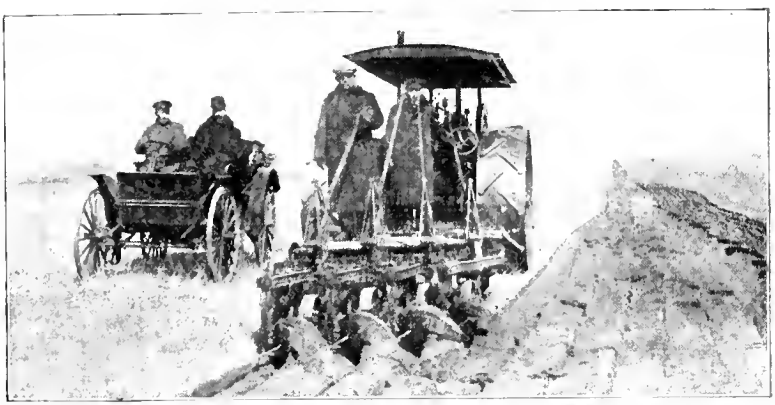
Horizontal I H C Gasoline Engine, 8 H-P.

The I H C line includes an engine for every section and every problem; of all sizes and costs, for all farm uses — vertical and horizontal (both stationary and portable) from 1 to 35 horse-power; engines on skids, 2 to 20 horse-power; sawing, pumping and spraying outfits. It also includes I H C gasoline tractors 12 to 45 horse-power—first-prize, gold-medal winners—the best all-around farm tractor by test. Information regarding I H C engines will be cheerfully given by the I H C local dealer, or, if you prefer, write to us direct for catalogue, prices, and details.



I H C 45 H-P Tractor Plowing in Winnipeg Motor Contest, July, 1910

The New Farm Power



A 20-H. P. I H C Famous Tractor plowing on the farm of A. Willsie, Moose Jaw, Sask.

The horse, the ox, and the plow handle have each seen their day. The man behind the plow is entering a new era of progress. Animal power is being replaced by the more efficient mechanical power.

Gasoline tractors for plowing and also for hauling, and delivering power from the belt have jumped into favor so rapidly that manufacturers find difficulty in meeting the demand.

In this rapid evolution from animal to mechanical power, one tractor stands out as pre-eminently the most practical. This was demonstrated in the Winnipeg Agricultural Motor Contest held in July, 1910, when I H C tractors established two new world's records — one record for fuel economy and the other for the largest per cent of the engine's brake horse power delivered at the draw-bar. In this contest, the I H C 45-H. P. tractor pulled a ten-furrow plow in heavy gumbo soil, plowing almost 2½ acres per hour and using only 2.11 gallons of gasoline per acre. No other tractor in the contest was able to do equal work on the same amount of fuel. The I H C 20-H. P. tractor used 2.10 gallons of gasoline in plowing an acre. These are new world's records for fuel economy.

In the test for draw-bar power, I H C tractors again established new records. The I H C 45-H P. delivered 75.8 per cent of its brake horse power at the draw-bar; the I H C 20-H. P. delivered 71.1 per cent; and the I H C 15-H. P. delivered 75 per cent of its power at the draw-bar.

The I H C line of tractors includes several styles and the following sizes: 12, 15, 20, 25, and 45-H. P.

The I H C local dealer will be pleased to give complete information.

An I H C 20-horsepower Gasoline Tractor drawing three 8-foot binders on the farm of Spencer Otis, Barrington, Ill.

Farm Machines and Progress

The Production of Wheat

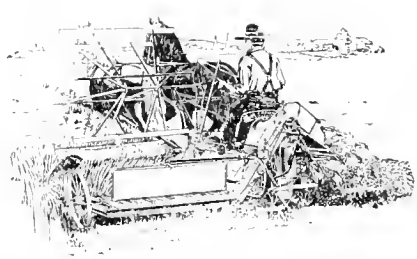
EDITOR'S NOTE. — The accompanying maps, Nos. 1 and 2, show the value of agricultural machines in use in 1850 and in 1900, and maps Nos. 3 to 9 inclusive show the production of wheat in the United States by decades, beginning with 1849.

The number of farms increased from 1,500,000 in 1850 to 6,000,000 in 1900, and the total area under cultivation increased during the same period from 293,000,000 acres to 735,500,000 acres. The population of the United States has increased from 4,000,000 in 1790 to 92,000,000 in 1901.

The Staff of Life

The origin of wheat is unknown. It is at least as old as civilization, and was probably used as food by our primitive ancestors long before they emerged from the obscurity of the ages. For more than forty centuries the golden cereal has been the staff of life of civilized nations. In the advancement of human welfare, no cereal has been more instrumental than wheat. It has developed the mechanical ingenuity and other intellectual faculties of man. Without wheat, farms would be abandoned, cities would crumble into ruin, and civilization would perish.

From a bulletin compiled by Miss Helen W. Atwater for the Department of Agriculture, we learn that probably no food, unless it is milk, is more generally used than bread, nor is there any food that constitutes a larger part of the diet of the average person. In the earliest historical records it is spoken of, and the wild tribes which to-day inhabit South Africa know something of its use. Of course, the bread made by the Kafir to-day, or by the American Indian three hundred years ago, is very different from that with which we are familiar. The Kafir simply grinds his grain between two stones, makes a paste of this meal and water, and bakes it in the ashes of his camp fire. Israel, in Egypt, ate leavened bread, the ancient Greeks cultivated the yeast plant, in Pompeii an oven was found containing loaves of bread not unlike that of the present day, many European peasants still bake their weekly loaves in the village oven, and so on, to the mammoth bakeries and innumerable fancy breads of modern times. The reason for this importance of bread is very simple. Ever since the far-off days when the wild cereals were first found or cultivated men have known that food prepared from them would support life and strength better than any other single food except milk. Although in this country the ease with which other foods can be obtained makes bread seem less important, there are many districts of Europe and Asia where it is still the "staff of life," and where when people pray for their daily bread they mean it literally.



An I H C Binder in the Field

I H C Harvesting and Haying Machines

The I H C line includes Champion, Deering, McCormick, Milwaukee, Osborne, and Plano binders, reapers, headers and header-binders, mowers, rakes (sulky, sweep and side delivery), hay tedders, hay loaders, hay stackers, binder twine, and knife grinders. Any harvesting or haying machine stenciled with the I H C trademark is thoroughly dependable. We can guarantee it to be first-class in every respect. The best crop insurance is an I H C harvesting machine.

Implements and Farm Machines in 1860

Each Dot Represents $30,000 Worth of Farm Machines

From "Agricultural Production in the U. S. since 1850," in preparation by Henry C. Taylor and John T. Condon, with the financial assistance of the Carnegie Institution of Washington, D. C.

Even in the United States bread probably plays a more important part than many realize. Statistical investigations which have been conducted by the government indicate that at present the annual per capita consumption of wheat in the United States is about 4½ bushels, which represents not far from a barrel of flour, and there are reasons to suppose that this amount is increasing.

The Early Struggle for Bread

During the first seventy years of our national life, our abundant resources failed to bring us any great increase in commerce or in the products of agriculture, trades, and industries. Notwithstanding the fact that the virgin soil was practically free to the settler, our production of wheat was insufficient to supply our people with bread, and the little that was imported was taken from the mouths of the poor. In the beginning of the century just past, but 3 per cent of the people of America lived in cities; the remainder lived on the farms and in small towns, and were dependent upon agriculture for food; there was little manufacturing—the people were dependent upon the mother-country for almost everything except the products of the soil. It, therefore, will seem a surprising statement when it is said that the people in the United States as late as 1845 did not raise enough wheat for their bread. In that year only 4⅓ bushels per person were raised in the United States, while in the year 1800, 5½ bushels per person were raised. We had during the first half of the century no factories such as employ thousands of hands to-day, and our cities were mere villages; therefore, it is no wonder that, with a population in the United States that had quadrupled since 1800, economists were alarmed at the failure of the food supply to keep pace with our rapid increase in population. It is not too much to say that the limit of food production with the sickle had been reached

Increase in Production of Food

About the middle of the last century there appears to have been a remarkable change in the food-producing power of the American people. From a low rank among nations, we have advanced to the highest position, with a producing power in agriculture and manufacture that almost equals that of all Europe. The source of this remarkable augmentation in our economic power is the result of invention—invention of agricultural machines. Our food supply increased decade by decade from 4.33 bushels of wheat per person in 1840, to 5.50 bushels in 1850, to 7.45 bushels in 1860, and to 10 bushels per person in 1891. In 1900 the per capita production of wheat decreased to 7 bushels, but increased to 9 bushels in 1909.

Surprising as these statements are, they tell only half the story. From the 97 per cent of people on the farms in 1800, the number decreased to 80 per cent in 1850, and in 1900 to 33 per cent; the farms to-day, therefore, with less than one-third of the labor of the country, are producing sufficient not only to feed the people upon them, but also the 67 per cent that live in the cities, and export a considerable tonnage of food supplies. This showing is most marvelous and has been made possible only by the genius of the American inventor, and the intelligence and energy of the American farmer. In all the history of the world this achievement stands out beyond comparison. Much, of course, has been due to the fertile soil of the great plains and valleys in which we live; much to the beneficent government that has given security to property and by its patent system has encouraged invention; much to the great railroads which have transported our products across the continent, but more is due to that body of inventors who recognized the necessity of improved methods on the farm, and who have provided that intelligent.

Implements and Farm Machines in 1900

Each Dot Represents $30,000 Worth of Farm Machines

From "Agricultural Production in the U. S. since 1840," in preparation by Henry C. Taylor and John Lee Coulter, with the financial assistance of the Carnegie Institution of Washington, D. C.

progressive, and energetic body—the farmers of America—with machines which have enabled them to produce food-stuffs more cheaply than in any other land under the sun, thereby enabling them to sell their products in the markets of the world in competition with the penny-a-day laborers of India and China.

Advancement in Agricultural Methods

Wonderful as has been the progress made in other fields of effort during the last half century, the greatest forward strides have been made in agriculture—and this unprecedented development is due almost wholly to the numerous ingenious improvements made in agricultural implements and machines since the middle of the nineteenth century. We all know how important a part modern farm machines played in the industrial progress of the United States, but many are prone to accept it in too much of a matter-of-fact way—prone to forget the many years of unremitting toil required to build the foundation upon which we now rest so securely.

Industrial Emancipation

The nineteenth century was as conspicuous for its industrial emancipation as for its political. Its history cannot be adequately written without taking note of its industrial progress, the abolishment of many of the more burdensome forms of toil, and the multiplication of the effectiveness of labor by supplying mechanical servants to replace human bondsmen.

The struggle for deliverance from the tyranny of despotic government, and the struggle for deliverance from the tyranny of despotic nature, are manifestations of the same craving after independence and individual sovereignty. There is a close kinship between the spirit which combats the arbitrary authority of man over man, and the spirit which seeks to establish the mastery of man over material agents. Free institutions do not quench man's intuitive ambition for power; they rather tend to substitute a different object for that ambition—power to serve the race instead of power to oppress it—power to invent mechanical agents instead of power to enthrall human agents; conquest over nature rather than conquest over mankind.

When it began to be recognized that the authority which kings had for centuries exercised under the solemn awe of "divine right" rested rather upon the ignorance and subservience of their subjects, it was natural to inquire whether the fetters which nature seemed to have placed on primitive man might not yield to his intelligence, whether he might not dominate each and make its force responsive to his commands through the instruments which his will should summon into action and direct to his service. The complete realization of man's independence

required that inanimate substitutes should supplant the liberated slave or serf in the irksome and menial tasks. So long as food and raiment and whatever contributes to sustenance, cultivation, and development, are procurable only through the unaided toil of the individual, each is limited to the most meager necessaries of life. Facilities for education and refinement, and the leisure which they require, were in centuries past possible only through the forced servitude of the many to the few. The inventor of machines prepared the way for political emancipation and deserves to share the honor which is freely accorded political liberators. He has multiplied artificial servants until the average citizen to-day enjoys the service of a corps of mechanical slaves more efficient, more capable, and more subservient to the will of the master, than the gangs of human chattels which served the planters of the South fifty years ago, or the retinue of vassals that ministered to the barons of medieval Europe.

We little realize the extent to which we are served by mechanical servants, the extent to which they relieve man from the more burdensome forms of physical toil, and promote him to a sphere where his mental faculties rather than his physical strength measure his earning capacity. If we were to banish the labor-saving machines which invention has provided, we would abandon civilization and reduce ourselves to a condition far more intolerable than that of the primitive savage, for we should have his limitations imposed upon the craving and aspiration to which he was a stranger. An invention, such as the reaping machine, which blazed the trail to higher achievement, is more important than many of the dynasties which have been conspicuous in history. Some inventors whose names the world seldom mentions have left a more potent and enduring impress upon subsequent history than the famous heroes of battle or statecraft.

The Ever-Present Problem

The opinion that the wonderful wealth and commerce of the United States have sprung entirely from our natural resources has found a too common acceptance among our people. As we think of the increasing population and the higher cost of living, we realize that the ever-present problem of mankind has been to obtain food. The massacre of tribes and the marching of armies have had the obtaining of food as their inspiration. There has been no great progress in the world where food was not plenty. The importance, therefore, of the food producer in the world is manifest, and the honor due to those who have done most to assist in securing a bounteous food supply is too often forgotten.

Wheat Production in the United States, 1866-1909

The following figures show the production of wheat in the United States by years beginning with 1866 and ending with 1909, as compiled by the Bureau of Statistics of the United States Department of Agriculture:

Year	Bushels	Year	Bushels	Year	Bushels
1866	151,000,000	1881	383,280,000	1896	427,684,340
1867	212,441,400	1882	504,185,470	1897	530,149,168
1868	224,630,000	1883	421,086,636	1898	675,148,765
1869	260,140,000	1884	512,765,550	1899	547,303,846
1870	235,884,700	1885	357,112,960	1900	522,229,295
1871	239,722,400	1886	457,218,000	1901	748,460,170
1872	249,997,300	1887	456,329,000	1902	670,063,000
1873	281,254,700	1888	415,868,000	1903	637,821,835
1874	292,102,700	1889	490,560,000	1904	552,300,347
1875	292,136,000	1890	399,262,000	1905	692,979,489
1876	289,350,560	1891	611,780,000	1906	735,260,970
1877	364,104,140	1892	515,949,000	1907	634,087,000
1878	420,122,420	1893	396,131,725	1908	664,602,000
1879	448,756,030	1894	460,267,416	1909	735,000,000
1880	498,549,868	1895	467,102,947		

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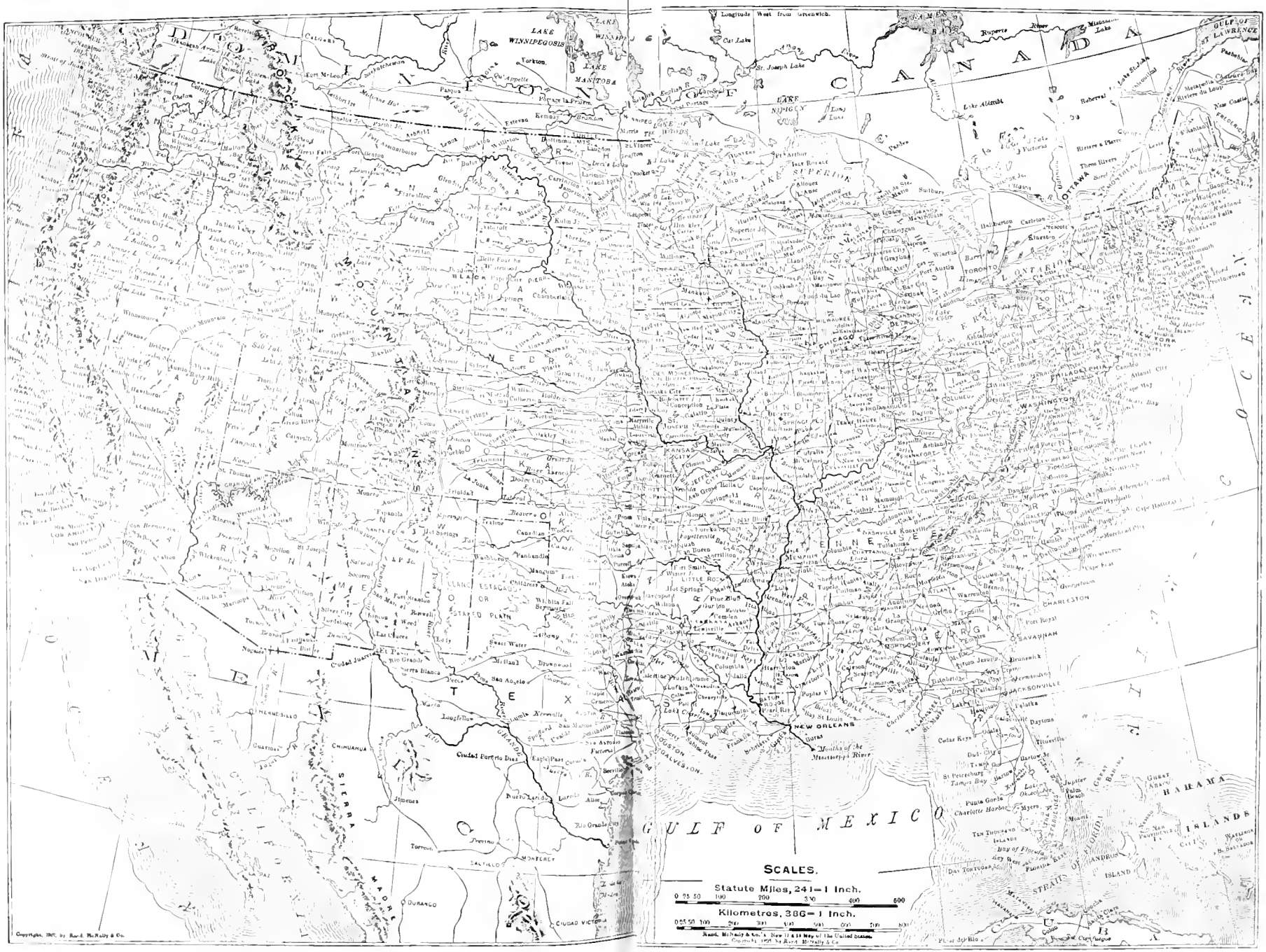
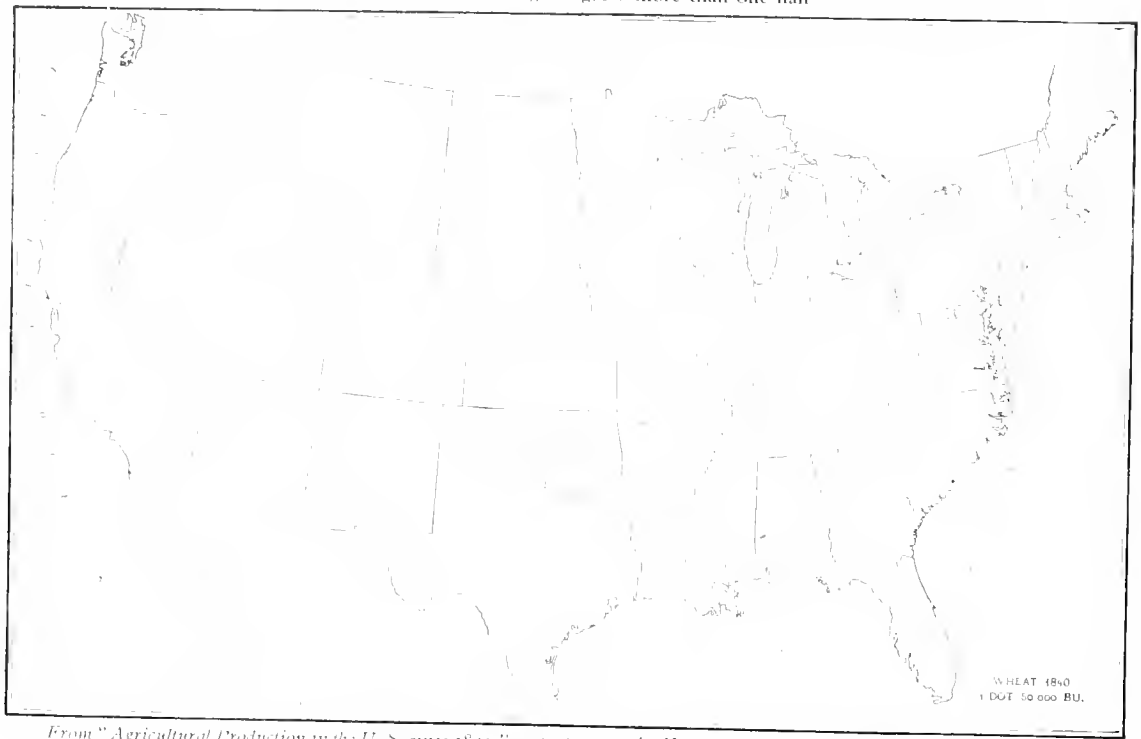


Wheat Production in 1840

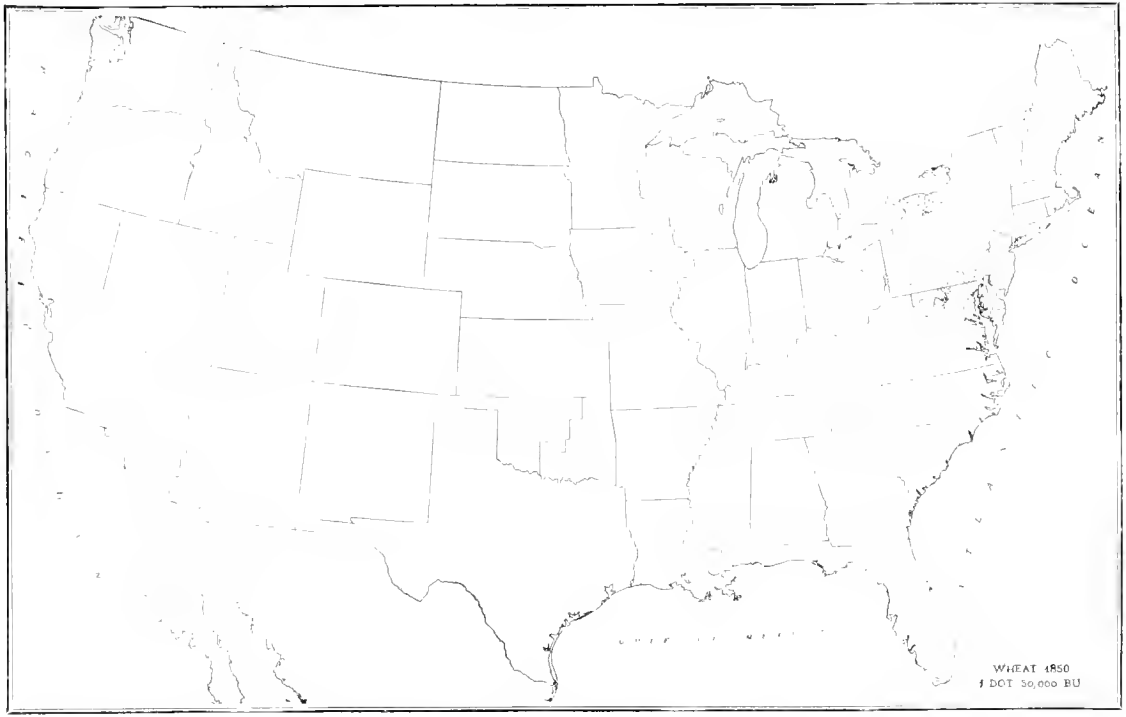
Each Dot Represents 50,000 Bushels. Of the total crop of 84,000,823, the four states Ohio, Pennsylvania, New York, and Virginia grew more than one-half



From "Agricultural Production in the U. S. since 1840," in preparation by Henry C. Taylor and John Lee Coulter, with the financial assistance of the Carnegie Institution of Washington, D. C.

Wheat Production in 1850

Note that the Wheat Belt is moving westward into Michigan, Illinois, and Wisconsin



From "Agricultural Production in the U. S. since 1840," in preparation by Henry C. Taylor and John Lee Coulter, with the financial assistance of the Carnegie Institution of Washington, D. C.

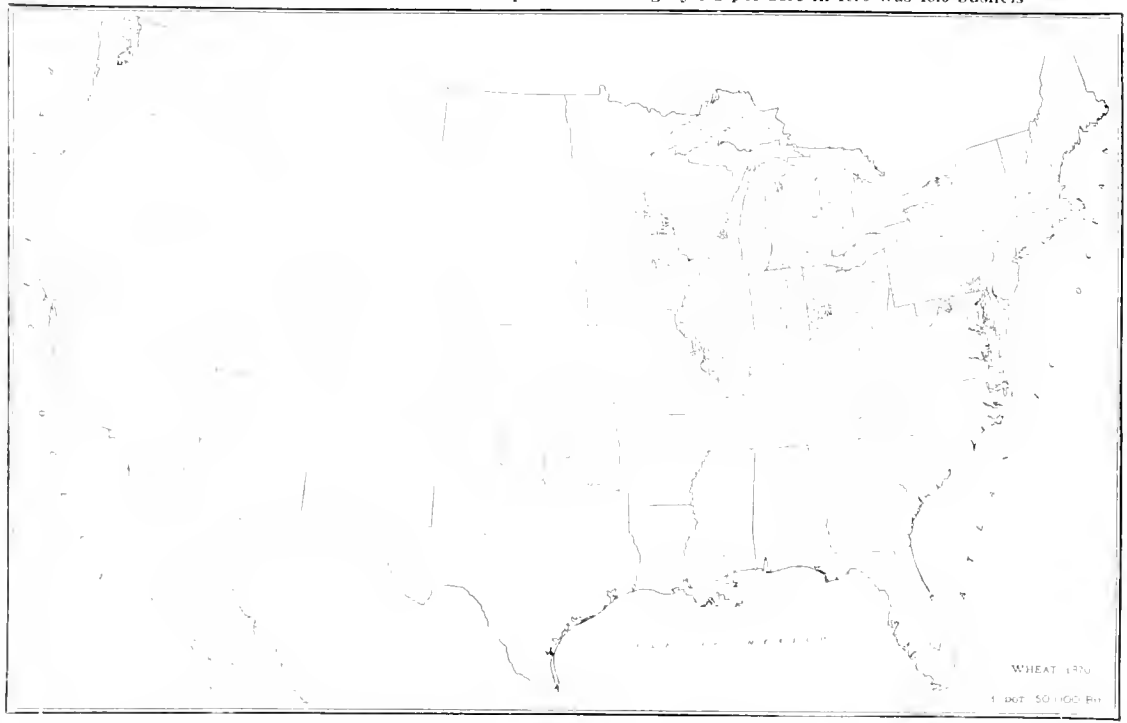
Wheat Production in 1860

The Central States, Illinois, Indiana, and Wisconsin, were leading in Wheat Production. The total crop of the country was 173,105,000 bushels, or more than twice as much as that of 1840

From "Agricultural Production in the U. S. since 1840," in preparation by Henry C. Taylor and John Lee Coulter with the financial assistance of the Carnegie Institution of Washington, D. C.

Wheat Production in 1870

Whereas the Eastern States are growing about the same amount that they grew in 1840, the Central and the Western States have largely increased their wheat crops. The average yield per acre in 1870 was 13.6 bushels



From "Agricultural Production in the U. S. since 1840," in preparation by Henry C. Taylor and John Lee Coulter, with the financial assistance of the Carnegie Institution of Washington, D. C.

Wheat Production in 1880

Wheat Growing is moving westward into Kansas and Nebraska

From "Agricultural Production in the U. S. since 1840," in preparation by Henry C. Taylor and John Lee Coulter, with the financial assistance of the Carnegie Institution of Washington, D. C.

Wheat Production in 1890

Minnesota and the Dakotas are now the leading Wheat States; California also is growing large crops

From "Agricultural Production in the U. S. since 1850," in preparation by Henry C. Taylor and Edwin Le Conte Taylor, with financial assistance of the Carnegie Institution of Washington, D. C.

Wheat Production in 1900

Minnesota and North Dakota have become the leading Wheat Growing States. These two states alone produced nearly twice as much as the total crop grown in this country in 1840

From "Agricultural Production in the U. S. since 1840," in preparation by Henry C. Taylor and John Lee Coulter, with the financial assistance of the Carnegie Institution of Washington, D. C.

Soil Building

Farming in America has yet to be learned. We have been a nation of crop growers, not farmers. We found our soils fertile; we have drawn yearly on the deposits made by nature. In the outset this was wise practice, indeed was inevitable. Gradually, year by year, the fertility has been used up. Thousands of farms are now so reduced that they begin to show the lack of fertility. Other thousands are worse off. The "average farmer" is making barely a living, and year by year his soil is getting poorer rather than richer. There is no state that is an exception to this truth. Illinois, California, Colorado, Oregon, Washington, every one of the richest states in the Union, has learned that constant cropping will use up available plant food.

The fork method of spreading is hard, disagreeable work, and very wasteful

In the past men have "moved on." To-day they are "moving on" to the Canadian Northwest, and to the newer irrigated sections of America. There are no longer any new lands left to which man may move. There are undiscovered riches within our own boundaries. It is cheaper to take possession of our own, and it is better so. It is time to learn farming. It is time to lose some of that braggart air that we have used so long; to cease glorifying ourselves for being born on soil that God made rich, and to learn the secrets of soil enrichment and good agricultural practice.

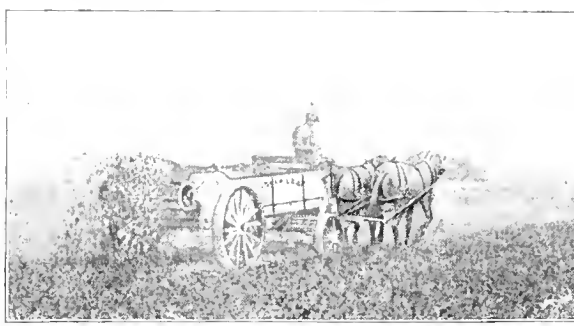
In the Old World men know better than we how to farm. The writer has stood on fields that were old fields 2,000 years ago, and found them far more fertile than even the best fields of America. Let's begin to learn soil building, then, rather than soil robbery, of which we already know enough

What constitutes soil fertility? We don't know all of it yet. These things we know. Soils are living, growing, breathing things. That is, "live," rich soils are living things. They are inhabited by millions of microscopic organisms commonly known as bacteria. The more of the useful bacteria a soil has in it the richer, the more productive it is. The fewer bacteria the "deader" it is in every sense, the less possible to make profit. There is absolutely no evasion of this law. A rich soil is a living soil. Now how can a living soil be made?

First, get the water out of it, the stagnant water. Drain the land. Air is necessary to life. Then if it is in danger of sourness, lime it. Carbonate of lime is the source of fertility. It promotes wonderful bacterial life in soils. It promotes fertility by stopping the waste of nitrogen as well. Soils filled with carbonate of lime naturally tend toward increase in fertility. What is carbonate of lime? It is the natural, unburned, ground limestone, in imitation of how God made soils in the beginning.

Very few soils have enough carbonate of lime in them to make maximum crops. The best farmers of to-day, everywhere east of the Missouri River, are using lime. International manure spreaders are the best means yet found for distributing ground lime stone.

What else can we do to make a soil truly alive? Bacteria love lime; yes, and vegetable matter in the soils. Living soils have humus in them, decaying vegetable matter. The more of this the more bacteria, the more plant food. Manure makes land rich. Can you remember that? "Pshaw!" you exclaim, "my grandfather knew that."



Spreading Manure with an I H C Spreader

Yes, your grandfather knew it, your father forgot it; you are beginning to learn it for yourself. Agricultural truth is as old as the pyramids. Indeed, the ancient peoples knew more than we about most things pertaining to soil building. Our latest discoveries are only confirming what the ancients knew.

Manures make land rich! That is the vital truth that needs to be impressed on the American farmer to-day. Carbonate of lime makes manure show its effects in the soil for a much longer time than when the soil is sour. Phosphorus added to the manure doubles its efficiency. "Hold on," you exclaim, "what in thunder is phosphorus?" It is the vital element in bones, it is the true source of life in man, beast, and herb. Thorne of Ohio proved that manures reinforced with phosphorus yielded double what they did without it. You find phosphorus in mines of fossil rock in Tennessee. You buy "floats," or fine ground Tennessee rock, mix that with your manure, or you buy "acid phosphate," the same rock treated with sulphuric acid, and mix that with the manure. Either will double the usefulness of the manure.

"Manure, what is it worth, anyway? It is a lot of work to handle it, and will it pay." You ask this, and Thorne and Hopkins answer: A ton of manure may be worth in general farm crop returns as much as $4.00. That is, perhaps, an extreme estimate. It is never worth less than $2.00. A horse makes at least $25.00 worth of manure in a year, and usually considerably more. A steer makes $20.00 worth. A sheep $2.00. You keep a good many cows, horses, sheep. Do you neglect this, the best of all revenues? Best because it remains a permanent asset of fertility on your land. It makes your farm worth more. "Oh, well, don't worry, I haul the manure out every fall." You do, do you? Well, it has lain in the weather or in piles firing, all summer. It has lost a little more than half its value in that time. Then you have hauled it out in a wagon and with much disagreeable labor spread it imperfectly by hand. A few spots you have made too rich, so that the grain falls down; the remainder of the farm has gone untouched. Now to get true value out of this manure, don't you know that you ought to own an International manure spreader, haul out the manure as fast as it is made, and get it spread evenly over the land? A ton of manure thus spread is worth four tons left to lie in the yard till fall and imperfectly spread. For manure carries bacteria, manure carries life to the land.

Analysis of Manures

In the Farmers' Bulletin, No. 21, issued by the Department of Agriculture at Washington, D. C., is a table which shows the analysis of farmyard manure. This table gives the value per ton of the three important fertilizing elements contained in various kinds of manure

	Manure Water	Nitrogen	Phosphoric Acid	Potash	Value per Ton
Cattle	75.25%	.420%	.200%	.440%	$2.02
Horse	48.60%	.490%	.260%	.480%	2.21
Hog	74.13%	.840%	.390%	.320%	3.29
Sheep	59.52%	.708%	.301%	.591%	3.30
Chicken	56.00%	80–2.000%	50–2.000%	80–900%	7.07

It will be seen that three elements, nitrogen, phosphoric acid, and potash, are contained in manure to the value of from $2 to $7 per ton

Stable Manure

The Maryland Agricultural Experiment Station in Bulletin No. 122, entitled "Stable Manures," proves conclusively that fresh manure is more valuable than rotted manure; also that when applied as a top-dressing manure is far more effective as a fertilizing agent than when plowed under. The results of these experiments are embodied in a series of tables, two of which are reproduced below. The first table shows a comparison of the yields from unmanured land, land which received applications of fresh manure, and land which received applications of rotted manure. The second table shows that manure used as a top-dressing proves more valuable than manure plowed under. There is no good reason for burying manure.

Comparison of Yields from Application of Fresh and Rotted Manure
Yields per acre in bushels.

	*Corn Bushels	†Wheat Bushels
Unmanured	38.1	16.1
Fresh manure	70.7	19.7
Rotted manure	65.1	19.1
Gain from fresh manure	32.6	3.6
Gain from rotted manure	27.6	3.0
Gain of fresh over rotted manure	5.0	0.6

*Average of 4 crops. †Average of 2 crops.

Results of Applying Fresh and Rotted Manure Before and After Plowing
(Yields per acre)

	FRESH MANURE				ROTTED MANURE			
	Corn*		Wheat		Corn		Wheat†	
	Grain	Fodder	Grain	Straw	Grain	Fodder	Grain	Straw
	Bu	Lbs	Bu	Lbs	Bu	Lbs	Bu	Lbs
Before plowing	87.2	6050	20.3	1080	82.3	6550	19.8	760
After plowing	98.1	7500	22.3	1160	82.6	6450	20.7	960
Gain from using manure as a top dressing	10.9	550	2.0	80	0.3	100	.09	200

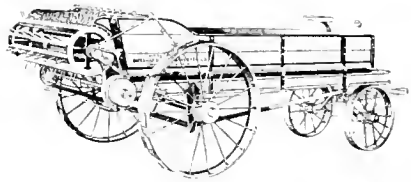
*Average of 2 crops. †Average of 1 crop

Plant Food Removed From Each Acre by Various Farm Crops

Crops	Weight per acre Pounds	Nitrogen Pounds	Phosphoric Acid Pounds	Potash Pounds	Lime Pounds
Wheat, 20 bushels	1,200	25	12.5	7	1
Straw	2,000	10	7.5	28	7
Total		35	20	35	8
Barley, 40 bushels	1,920	28	15	8	1
Straw	3,000	12	5	30	8
Total		40	20	38	9
Oats, 50 bushels	1,600	35	12	10	1.5
Straw	3,000	15	6	35	9.5
Total		50	18	45	11
Corn, 65 bushels	2,200	40	18	15	1
Stalks	3,000	35	2	45	11
Total		75	20	60	12
Mangel-wurzels, 10 tons	20,000	75	35	150	30
Meadow hay, 1 ton	2,000	30	20	45	12
Red clover hay, 2 tons	4,000	.....	28	66	75
Potatoes, 150 bushels	9,000	40	20	75	25

I H C Spreaders

I H C spreaders are made in three styles: Corn King and Kemp 20th Century, return apron machines, and Cloverleaf endless apron. Each made in a number of sizes. Write for beautifully illustrated catalogue describing the machine in which you are interested.



IT IS A SEAL OF EXCELLENCE AND A GUARANTEE OF QUALITY

Repair Parts

When you buy a sickle, knife section, ledger plate, guard plate, pitman strap, or other repair part, look for the I H C trade mark — otherwise it may or it may not fit — it may or it may not be made of good material. In other words, if you buy a repair part without this trade mark you are taking chances at a time when delays mean serious losses.

When you buy repair parts with this mark, the repairs are genuine, for the manufacturer has a reputation to uphold, and is just as much interested in making good repair parts as in building good machines. The parts will fit, and they will give satisfactory service.

At numerous branch houses and at thousands of local agencies throughout the world, a full supply of repair parts for these machines is always carried in stock, and any part of a machine can be secured on short notice.

Delay in securing the proper repairs for a machine may mean the partial loss of a crop equal to or greater than the cost of the machine, and it is a source of great satisfaction to know that repairs for all I H C machines can be quickly obtained. The owner of an I H C machine is insured against loss by the absolute certainty of getting repairs for his particular machine at any time he may require them.

Statutory Weights of the Bushel

STATE OR TERRITORY	Wheat	Rye	Oats	Barley	Buckwheat	Shelled corn	Corn on cob	Cornmeal, unbolt	Bran	Malt	Potatoes, Irish	Potatoes, sweet	Carrots	Onions	Turnips, English	Beets	Beans	Peas	Apples	Dried Apples	Dried peaches	Castor beans	Flax seed	Hemp seed	Millet seed	Timothy seed	Blue grass seed	Hungarian grass	Clover seed
United States	60	56	32	48	42			48		34	60							60				50	56						
Alabama	60	56	32	47		56	70	48			60	55			55		60	60		24	33								
Alaska																													
Arizona	60	56	32	48													56												
Arkansas	60	56	32	48	52	56	70	48	20		60	50		57	57		60	60	50	24	33		56		50	60	14		60
California	60	54	32	50	40																								
Colorado	60	56	32	48	52		70	50			60			57			60							44		45	14		60
Connecticut	60	56	32	48	48			50	20		60	54	50	52	50	60	60	60	48	25	33		55						60
Delaware	60							48																					
Dist. Col	60										60																		
Florida	60	56	32	48		56	70	48	20		60	60		56	54		60		48	24		48			50				
Georgia	60	56	32	47	52	56	70	48	20		60	55		57	55		60	60		24	33		56	44		45	14		60
Hawaii	60	56	32	48																									
Idaho	60	56	30	48	42						60								45	28	28		56						60
Illinois	60	56	32	48	52	56	70	48	20	38	60	50		57	55		60			24	33	40	56	44		45	14		60
Indiana	60	56	32	48	50	56	68	50		35	60	55		48	55		60			25	33	40		44	50	45	14		60
Iowa	60	56	32	48	52	56	70		20		60	40		57			60		48	24	33	40	56	44	50	45	14	50	60
Kansas	60	56	32	48	50		70	50	20	32	60	50		57	55		60		48	24	33	40	56	44	50	45	14	50	60
Kentucky	60	56	32	47	50	56	70	50	20		60	55		57	60		60	60		24		45	56	44	50	45	14	50	60
Louisiana	60	56		48																									
Maine	60	56	32	48	48			50			60		50	52	50	60	60	60	60	44									
Maryland			26								50																		
Mass	60	56	32	48	48	56		50	20		60	54	50	52			60	60	48	25			55			45			60
Michigan	60	56	32	48	48	56	70	50			60	56		54	58		60	60	48	22		46	56	44	50	45	14	50	60
Minnesota	60	56	32	48	50	56	70				60	55	45	52		50	60	60	50	28			50	48	45	14	48		60
Mississippi	60	56	32	48	48	56	72	48	20	38	60	60		57	55		60	60		26		46	56	44	50	45	14	50	60
Missouri	60	56	32	48	52	56	70	50	20	38	60	56	50	57	42		60	60	48	24		46	56	44	50	45	14	48	60
Montana	60	56	32	48	52	56	70	50	20	30	60		50	57		50	60	60	45				56	44		45	14	50	60
Nebraska	60	56	32	48	52	56	70	50	20	30	60	50		57	55		60	60		24		46	56	44	50	45	14	50	60
Nevada																													
New Hamp	60	56	32					50			60						62	60											
New Jersey	60	56	30	48	50						60	54		57			60	60	50	25			55						64
New Mexico																													
New York	60	56	32	48	48			50	20		60	54	50	57			60	60	48	25			55			45			60
N Carolina	60	56	32	48	50			48										60					55						60
N Dakota	60	56	32	48	42	56	70		20		60	46		52	60	60	60	60	60	50			56		50	45			60
Ohio	60	56	32	48	50	56	68			34	60	50	50	55	60	56	60	60	50	24			56	44	50	45		50	60
Oklahoma	60	56	32	48	42	56	70		20		60	46		52	60	60	60	60					56			42			60
Oregon	60	56	32	46	42						60								45	28									60
Pennsylvania	60	56	32	47	48						56			50															60
Rh'de Island	60	56	32	47	48	56	70	50	20	38	60	54	50	50	50	50	60	60	48	25		46	56	44	50	45		50	60
So Carolina								48																					
So Dakota	60	56	32	48	42	56	70		20		60	46		52	60	60	60	60					56			42			60
Tennessee	60	56	32	48	50	56	70	48	20		60	50	50	56	50	56	60	60	50	24		46	56	44	50	45	14	48	60
Texas	60	56	32	48	42	56	70		20		60	55		57	55		60		45	28			56	44	50	45		48	60
Utah																													
Vermont	60	56	32	48	48	56					60		50	52	60	60	62	60	46							45			60
Virginia	60	56	30	48	52	56	70	50		38	56	56		57	55		60	60		28	32		56	44	50	45	14	48	60
Washington	60	56	32	48	42						60								45	28			56						60
W Virginia	60	56	32	48	52						60						60			25			56			45			60
Wisconsin	60	56	32	48	50			50	20	34	60	54	50	57	42	50	60	60	50	25			56	44	50	45		48	60
Wyoming																													

NOTE. — Rye meal takes 48 pounds to the bushel in the District of Columbia and 50 in Maine, Massachusetts, New York, Rhode Island, and Wisconsin. Peeled dried peaches take 48 lbs. to the bushel in Alabama and 40 in Virginia. The metric system is used in the Philippines and Porto Rico.

Deviations in Laws of Weights and Measures

With such diversity of weights and measures it is apparent that joint action should be taken by the various states with a view to adopting uniform laws with reference to weights and measures, and even now conferences of many interested departments, municipal and state, are being held under the lead of the Director of the Bureau of Standards of the United States Government.

Weights and Measures Used in the United States

TROY WEIGHT

24 grains . . . . 1 pwt.
20 pwt. . . . 1 ounce
12 ounces . . . 1 pound

Used for weighing gold, silver and jewels.

APOTHECARIES' WEIGHT

20 grains . . . . 1 scruple
3 scruples . . . 1 dram
8 drams . . . . 1 ounce
12 ounces . . . 1 pound

The ounce and pound in this are the same as in Troy Weight

AVOIRDUPOIS WEIGHT

27 11/32 grains . . . 1 dram
16 drams . . 1 ounce
16 ounces . 1 pound
25 pounds . . 1 quarter
4 quarters . 1 cwt.
2,000 pounds . . 1 short ton
2,240 pounds . . 1 long ton

DRY MEASURE

2 pints . . . . . 1 quart
8 quarts . . . . . 1 peck
4 pecks . . . . . 1 bushel
36 bushels . . . . . 1 chaldron

LIQUID MEASURE

4 gills . . . . 1 pint
2 pints . . . . 1 quart
4 quarts . . . . . 1 gallon
31 1/2 gallons . . . . 1 barrel
2 barrels . . . . . 1 hogshead

SQUARE MEASURE

144 square inches . 1 sq. foot
9 square feet . . . 1 sq. yard
30 1/4 square yards . . . 1 sq. rod
40 square rods . . . 1 rood
4 roods . . . . . 1 acre
640 acres . . . . . 1 sq. mile

TIME MEASURE

60 seconds . . . . . 1 minute
60 minutes . . . . . 1 hour
24 hours . . . . . 1 day
7 days . . . . . 1 week
28, 29, 30, or 31 days
1 calendar month
(30 days, 1 month in computing interest)
365 days . . . . . 1 year
366 days . . . . . 1 leap year

CIRCULAR MEASURE

60 seconds . . . . . 1 minute
60 minutes . . . . . 1 degree
30 degrees . . . . . 1 sign
90 degrees . . . . . 1 quadrant
4 quadrants, 12 signs
or 360 degrees . . 1 circle

LONG MEASURE

12 inches . . . . . 1 foot
3 feet . . . . . 1 yard
5 1/2 yards . . . . 1 rod
40 rods . . . . . 1 furlong
8 furlongs . . . 1 statute mile
3 miles . . . . . 1 league

CLOTH MEASURE

2 1/4 inches . . . . . 1 nail
4 nails . . . . 1 quarter
4 quarters . . . 1 yard

PAPER MEASURE

24 sheets . . . . 1 quire
20 quires . . . . 1 ream (480 sheets)
2 reams . . . 1 bundle
5 bundles . . 1 bale

SURVEYOR'S MEASURE

7.92 inches . . . . . 1 link
25 links . . . . . 1 rod
4 rods . . . . . 1 chain
10 sq. chains or 160 sq. rods . . . . . 1 acre
640 acres . . . . . 1 sq. mile
36 sq. miles (6 miles square) . . . . . 1 township

CUBIC MEASURE

1,728 cubic in. 1 cubic foot
27 cubic ft. 1 cubic yard
128 cubic ft. 1 cord (wood)
40 cubic ft. 1 ton (shipping)
2,150.42 cubic in. 1 standard bu.
231 cubic in. 1 standard gal.
1 cubic ft. about 4-5 of a bu.

MARINER'S MEASURE

6 feet . . . . 1 fathom
120 fathoms . . 1 cable length
7 1/2 cable lengths . . 1 mile
5,280 feet . . . . 1 statute mile
6,085 feet . . . . 1 nautical mile

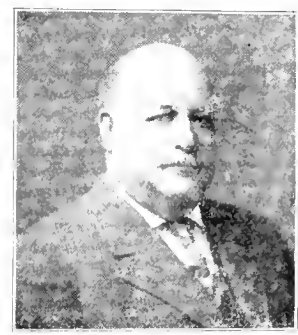
MISCELLANEOUS

3 inches . . . . . 1 palm
4 inches . . . . . 1 hand
6 inches . . . . . 1 span
18 inches . . . . . 1 cubit
21.8 inches . . . . . 1 Bible cubit
2.5 feet . . . . . 1 military pace

Trees Worth Growing

E. P. Holland, President
Texas Farm and Ranch Publishing Company, Dallas, Texas.

I have often heard men say: "I am too old to plant trees; I would get no benefit from trees planted by me now." A man so callous to his duty to posterity does no good while living, and does not deserve so grand a monument as a beautiful, fruitful tree to mark his last resting place.



E. P. Holland

If any man while living has not had the opportunity of planting and caring for at least a few beautiful fruit or other trees, he has been truly unfortunate, and he should remember in his last hours to say, as did the lamented James Stephen Hogg:

> "I want no monument of stone or marble, but plant at my head a pecan tree, and at my feet an old-fashioned walnut. And when these trees shall bear, let the pecans and walnuts be given out to the plain people that they may plant them, and make this a land of trees."

The grandest monument that a man can erect to his own memory is a judiciously selected tree that has been properly cared for during his lifetime, growing in a place selected for it by an eye trained for beauty and profit.

Trees that do not bear bounteous drops of life-sustaining food nuts, health-giving fruits, or beautiful flowers, or produce material for fuel, fence posts, or saw mill, are not worthy to occupy space on land fertile to grow them.

Trees should be known by the quantity and value of the nuts, fruits, and flowers they produce, and the memory of the man who planted and cared for them honored in proportion to the judgment with which they were selected and placed.

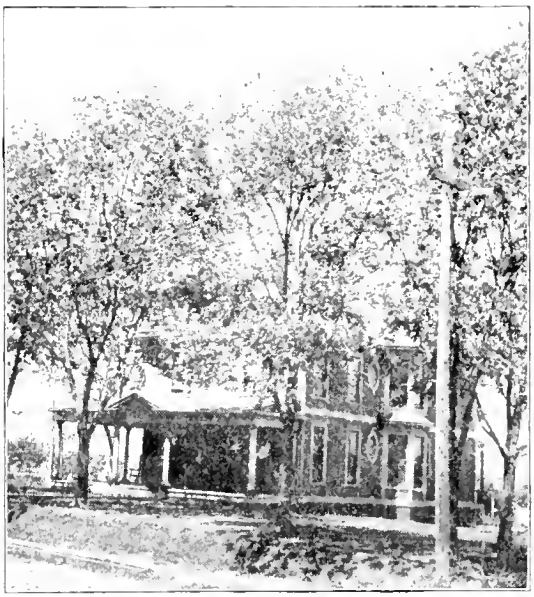
Every land owner, no matter how large or small his tract, should plant trees for shade and ornament, and the trees should be selected for the value of their products. Trees that bear nuts or fruits valuable for food, should be considered first; and second, those that make abundant shade and produce beautiful flowers. If there is room only for a limited number of trees, only those that produce abundant crops of food-nuts, or health-giving fruits should be planted.

The pecan (*Hicoria pecan*) which has been greatly improved by selection, grafting, and budding, should be first considered. Aside from its inestimable value because of the excellent quality and quantity of food-nuts it bears, as a shade tree many varieties have no peer, and the wood is equal to hickory for all purposes for which hickory is used. It ranges from Indiana down the Mississippi valley to the Gulf of Mexico, and down the Atlantic coast from South Carolina to Florida. A rich, deep alluvial soil and a moist atmosphere are necessary for best results, but the pecan thrives on many types of soil when properly cultivated.

Next in value to the pecan is the English or Persian walnut (*Juglans regia*). It is a native of Western Asia, but is extensively grown in this country. The cultivated range of this nut is the Atlantic slope from

New York south through New Jersey, southwest Pennsylvania, central Virginia, North Carolina, and Georgia. The tree when sheltered will endure near the coast as far north as Rhode Island and Massachusetts. English walnuts have been extensively planted in California, and the nuts bring a handsome revenue to the growers.

In areas where more desirable nut-bearing trees cannot be grown, the black walnut (*Juglans nigra*), of which there are many varieties, should be considered for the value of its nuts and timber. The black walnut was known and appreciated by the Romans. The wood is very valuable, and the nuts of the improved varieties, excellent. It prefers a rich, moist soil, and in certain favored sections grows very rapidly, sometimes bearing as early as the fourth year from seed. The tree often grows to the height of 100 feet, and is sometimes four feet in diameter. It is found in nearly every portion of the United States, and is known to thrive on many types of soil. In recent years the walnut has been planted, and paying returns are reported in many instances.



Home of F. P. Holland
The trees in front of the house are grafted pecans planted 17 years ago

Next to be considered are the chestnuts, both Japanese (*Castanea japonica*) and American (*Castanea dentata*). The Japan is smaller than the American chestnut, but resembles it in many respects. It has handsome foliage and a symmetrical habit of growth. It grows well in many localities in this country, and should be extensively planted.

The American chestnut has a wide range, and should have more consideration as a nut and shade tree. It is found native from Portland, Maine, through Vermont across the province of Ontario, Canada, to the southern extremity of Lake Huron, then southward across Michigan, Indiana, and Illinois, almost to the Mississippi River. It is also found in many of the southern states, and makes satisfactory growth on many types of soil in localities apart from its native range. The nuts are rich and nutritious and bring fancy prices on the market.

The butternut (*Juglans cinerea*) is closely related to the black walnut, which it resembles both in habit and botanical characteristics. The butternut extends farther east and north than the walnut. It is not

common in the Southwest, but it ranges from southern New Brunswick to the headwaters of the Mississippi. It is found in great abundance, and reaches its greatest development in the valley of the Ohio River. The trees bear comparatively early, and when cultivated produce many bushels of nuts.

The shag-bark hickory (*Hicoria ovata*) is a very valuable tree. The timber is tough and the fiber strong. It takes a high polish and is much in demand where strength and durability are wanted. The nuts are rich and nutritious and contain much food value. The shag-bark has a wide range, and may be found from New York to the Gulf of Mexico, and from the Atlantic to the Rocky Mountains, but its native growth is confined to rich alluvial bottoms.

The Chinkapin (*Castanea pumila*) is similar to the American chestnut, and is often called "dwarf chestnut." It ranges from Pennsylvania to Texas. It is the first nut to reach the northern markets, and therefore brings a fancy price.

The Western Chinkapin (*Castanopsis crysophylla*) is a habitant of the Cascade Mountains. The tree is an evergreen with leaves smooth and shiny above, but thickly covered beneath with a yellow scale. The growth varies from a tree 125 feet tall to a shrub from two to six feet tall. The nuts are small and have a soft shell. It is a very valuable ornamental tree, and the wood takes a fine polish.

Next to nut-bearing trees must be considered fruit trees, some of which answer well for shade and timber, but the real profit comes from the fruit. It is useless, because of the almost unlimited variety, to attempt to name or separate them. The apple, peach, plum, pear, and cherry are the most valuable, and one or more varieties of one or the other can be successfully grown in almost every locality; in fact, there are sections where all can be grown with more or less success.

Third, come the trees that produce valuable timber and beautiful flowers. First in this dual class is the magnificent magnolia (*Magnolia grandiflora*), the trunks of which in southeast Texas often measure eight, and even more feet in circumference. This is one of the handsomest trees in our southern flora. An evergreen with broad, shining leaves, magnificent, snow-white, deliciously fragrant flowers, it lends a charm to lawn or forest. The wood is said to be unequaled for piano keys and for many other purposes. It is a comparatively rapid grower, and will flourish in a wide area in suitable soils and locations.

It would be impossible within reasonable limits to name the varieties of trees most suitable to different sections, or to give specific information regarding planting and cultivation. It is a well known fact, however, that in taking up trees for transplanting, their roots should be exposed as little as possible, and not put in deeper than where they grew. The dirt should be packed closely about the roots, and water should not be permitted to stand around them.

One who has time, land, and inclination, will have pleasure in planting untried varieties, and may find some of them suitable, but generally speaking it is a waste of time for a farmer to experiment with trees. He should get the benefit of the experience of those who have already made it a study.

Barren trees, like barren livestock, are valuable only for slaughter. When forests are denuded, oil and coal fields are exhausted, the Pinchot-Ballinger feud forgotten, human ingenuity will find substitutes for wood, oil, and coal, but so long as civilization stands, man will continue to improve the quality, and increase the production of nuts, fruits, and flowers, and no substitutes will be sought or wanted.

The man who owns land and will not plant trees is as short-sighted and ambitionless as a clam located on a hard bottom in a stream of clear water.

Length of Germ Life in Various Seeds

Vegetables	Years	Vegetables	Years
Cucumber	8 to 10	Asparagus	2 to 3
Melon	8 to 10	Beans	2 to 3
Pumpkin	8 to 10	Carrots	2 to 3
Squash	8 to 10	Celery	2 to 3
Cauliflower	5 to 6	Corn on cob	2 to 3
Artichoke	5 to 6	Leek	2 to 3
Endive	5 to 6	Onion	2 to 3
Pea	5 to 6	Parsley	2 to 3
Radish	4 to 5	Parsnip	2 to 3
Beets	3 to 4	Pepper	2 to 3
Cress	3 to 4	Tomato	2 to 3
Lettuce	3 to 4	Egg Plant	1 to 2
Mustard	3 to 4	**Herbs**	**Years**
Okra	3 to 4	Anise	3 to 4
Rhubarb	3 to 4	Caraway	2
Spinach	3 to 4	Summer Savory	1 to 2
Turnip	3 to 6	Sage	2 to 3

Yield per Acre of Various Seed Crops

Under ordinary conditions of weather and soil the following yields of seed crops will be considered a fair average.

Beans	1200 lbs	Cucumbers	500 lbs.
Peas	2000 "	Muskmelons	400 "
Summer squash	500 "	Watermelons	800 "
Winter squash	500 "	Tomato	300 "
Sweet corn	2000 "	Cabbage	500 "

When to Plant Seeds

The seeds listed below are divided into two classes according to the temperature at which they will germinate and can be safely planted.

Class 1 includes seeds that will sprout in an average temperature of 45 degrees in the shade, which is about the temperature at the time peach and plum trees blossom.

Class 2 includes those seeds which will germinate at an average temperature of 60 degrees in the shade, the temperature about the time when the apple trees bloom.

Class I

Beet	Barley	Parsley
Oats	Parsnip	Carrot
Rye	Onion	Cabbage
Wheat	Pea	Cauliflower
Red clover	Radish	Endive
Crimson clover	Turnip	Kale
Grasses	Spinach	Lettuce

These can be planted with safety in the spring as soon as the ground can be prepared, and some of them, if planted in the fall, live through the winter.

Class II

Alfalfa	Squash	Soy bean
Cow-pea	Cucumber	Pole bean
Corn	Pumpkin	String bean
Cotton	Tomato	Melon
Egg plant	Pepper	Okra

Length of Time Trees and Bushes will Bear

Apple	25–40 years	Pear	50–75 years
Blackberry	6–11 "	Plum	20–25 "
Currant	20 "	Raspberry	6–1 "
Gooseberry	25 "	Strawberry	1–3 "
Peach	8–12 "		

Usual Distance for Planting Trees

	No. feet each way		No. feet each way
Apples	30 to 40	Peaches	16 to 20
Apples, dwarf	10 to 15	Cherries	16 to 25
Pears	20 to 30	Apricots	10 to 20
Pears, dwarf	10 to 15	Nectarines	16 to 20
Plum	16 to 20	Quinces	8 to 14

Time Required for Garden Seeds to Germinate

	Days		Days
Beans	5–10	Lettuce	6–8
Beet	7–10	Onion	7–10
Cabbage	5–10	Pea	6–10
Carrot	12–18	Parsnip	10–20
Cauliflower	5–10	Pepper	9–14
Celery	10–20	Radish	3–6
Corn	5–8	Tomato	6–12
Cucumber	6–10	Turnip	4–8
Endive	5–10		

Quantity of Seeds Necessary to Sow an Acre

Asparagus	5 lbs.	Melon, musk	3 lbs.
Beans, dwarf	1½ bus.	Melon, water	5 lbs.
Beans, pole	12 qts	Mustard	2 bu.
Beet	6 lbs.	Onion	6 lbs.
Buckwheat	1 bu.	Onion seed for sets	30 lbs.
Cabbage	¼ bu.	Onion sets	12 bus.
Carrot	4 lbs.	Orchard grass	30 lbs.
Cauliflower	*1 oz.	Parsnip	6 lbs.
Celery	*½ oz.	Peas	2 bus.
Clover	16 lbs.	Potato (cut-tubers)	8 bus.
Clover, crimson	16 lbs.	Pumpkin	5 lbs.
Corn	10 qts.	Radish	12 lbs.
Cow-pea	2 bus.	Rye	1½ bus.
Cucumber	2 lbs.	Sage	10 lbs.
Cress, water	3 lbs.	Spinach	12 lbs.
Cress, upland	3 lbs.	Squash, bush	6 lbs.
Egg-plant	*1 oz.	Squash, running	4 lbs.
Grass	4 bus.	Tomato	¼ lbs.
Kale, or sprouts	4 bus.	Turnip	2 lbs.
Lettuce	*1 oz.	Vetch	1 bu.

*Per 1000 plants

Usual Weights per Bushel of Seed

Kind of Seed	Pounds per Bushel
Alfalfa	60
Amber cane	45–60
Bent grass	
Creeping	15
Rhode Island	15
Bermuda grass	15
Bird's-foot clover	60
Bitter vetch	60
Blue grass	
Canada	14–20
Kentucky	14–30
Texas	14
Broad bean	50–60
Brome, awnless	10–14
Broom corn	45–60
Burr clover	
Hulled	60
Unhulled	8–10
Spotted	60
Castor bean	40–60
Clover:	
Alsike	60
Crimson	60
Egyptian	60
Mammoth	60
Red	60
White	60
Cowpea	50–60
Crested dog's tail	14–30
Fescue:	
Hard	12–60
Meadow	14–24
Red	12–15
Sheep's	16
Tall	14–24
Various leaved	15
Flat pea	50–60
Flax	48–56
Hemp	40–60
Japan clover:	
Hulled	60
Unhulled	18–25
Johnson grass	14–28
Kafir corn	50–60
Lentil	60
Lupine, white	50–60
Meadow foxtail	7–14
Meadow grass:	
Fowl	11–14
Rough-stalked	14–20
Meadow grass—Continued	
Wood	14–24
Millet	
Barnyard	30–60
Broom corn	45–60
Common	48–50
German	48–50
Golden Wonder	48–50
Hungarian	48–50
Pearl	48–56
Milo maize	50–60
Oat grass	
Tall	10–14
Yellow	7–14
Orange cane	45–60
Orchard grass	10–18
Pea	
Field	60
Garden, smooth	60
Garden, wrinkled	56
Peanut	20–30
Rape, winter	50–60
Redtop	
Chaff	10–14
Fancy	25–40
Rescue grass	12–28
Rice	43–45
Rye grass:	
English	28
Italian	12
Sainfoin	14–32
Serradella	28–36
Soy bean	58–60
Spelt	40–60
Sunflower	24–50
Sweet clover	
Hulled	60
Unhulled	33
Sweet corn (according to variety)	30–56
Sweet vernal, perennial	6–15
Teosinte	40–60
Timothy	45
Velvet bean	60
Vetch:	
Hairy	50–60
Spring	60
Water grass, large	14
Wild rice	15–28
Yellow trefoil	60

Sanitation in the Country

Henry Wallace, Editor Wallace's Farmer,
Des Moines, Ia.

It is now generally conceded that whatever other causes may have combined to increase the cost of living, one of the leading causes has been the decreasing supply of farm products combined with an increased demand. There are too many people living in town, too few living in the country; too many food consumers, too few food producers.

It is also generally conceded that labor is the limiting factor in crop production. Notwithstanding the fact that the disk has superseded the harrow; the one and two row cultivator, the old-fashioned single and double shovel plow; the binder, the sickle and cradle; the mower, the scythe; the horse rake, the hand rake; the hay loader, the fork; the corn binder, the old corn knife; notwithstanding all these wonderful improvements in modern machinery, which multiply the efficiency of labor many fold, the amount of crops in the United States is largely limited by the supply of skilled labor on the farms. Improved machinery, while multiplying the efficiency of the individual worker, reduces the number of workers by practically excluding from farm work all but the farm born and farm bred, and those born and bred in practically the same environment in which the work is to be done.

To increase rural population, train the young to farm work, keep them in vigorous health, imbue them with the farm spirit, and then keep them on the farm is a problem that interests and concerns the townsman quite as much as it does the farmer himself.

In sections where rotation of crops renders stock growing and improved farm machinery necessary, we cannot use the labor that comes to us from southern Europe. We are now getting but little from northern Europe and the British Isles. We cannot use the Oriental, nor can we use the town "back-to-the-lander" unless we get him young. The farm must, therefore, grow its own labor, and that of the highest efficiency physical, mental, and moral.

The farm should be the healthiest place in the land; but unfortunately it is not. There is no lack of sunshine, and outside the home there is no lack of pure air. There need be no lack of pure wholesome food, and certainly there is no lack of exercise. The main cause of sickness and death and of inefficiency in the survivors is lack of sanitation in country homes. It was my privilege as a member of the Country Life Commission appointed by President Roosevelt to investigate this subject over the length and breadth of the United States.

To my great surprise, I learned that about one-fifth of the children of what used to be known as the "poor white" and who are now known as the one-mule farmer, on the sandy soils of the South, notably on the Atlantic littoral, die in infancy from the effects of foot-itch, toe-itch, ground-itch, as it is variously called, due to a parasite which breeds in human excrement and enters the system through the feet. (This parasite completes its life history in about two months.) It also decreases the efficiency of the adult from 20 to 50 per cent by decreasing the red corpuscles of the blood. It does not affect people living in cities or towns who wear shoes and have sanitary outdoor water closets or modern

conveniences in the home. It is to check the ravages of this disease and thus increase the supply and efficiency of farm labor in the southern states, where it is so greatly needed, that Mr. Rockefeller has given a million dollars into the hands of scientists competent to deal with the problem. In the mountain sections of these states we found the numbers and efficiency of the population greatly decreased by the prevalence of typhoid fever and consumption. In fact, typhoid fever is now recognized as largely a rural disease, and as a rule is rarely found in cities except in the slums and places where there is the greatest lack of sanitation.

In the corn belt states we found the country slaughter house, usually somewhere near the town, at the head of a slough, each slaughter shop at the head of a different slough, never grouped together. To this the farmer takes his cattle which he suspects are tuberculous and which he fears to take to the city slaughter house under government inspection. The butcher feeds the offal of these cattle to his hogs, which inevitably become tuberculous; and as there is no government inspection, the flesh of both hogs and cattle is sold in the neighboring town. These country slaughter houses are always infested with rats, and as there is a small percentage of trichinosis among the hogs, the rats, being the natural hosts of the trichina, carry the disease to neighboring farms, where the chickens, in their craving for animal food, especially during the winter season, devour the carcasses of the slaughtered rats. It is fortunate that we cook our chickens.

The great source of death and inefficiency in the country, however, is the general unsanitary condition of the farm home. The farmer living in an unsanitary farm home is especially liable to typhoid fever and consumption, the two great scourges of the rural districts.

Typhoid fever is generally due to impure water; and the water is generally rendered impure by reason of an open privy, from which the impurity enters the well by surface wash, or by seepage underground. It may also be carried by flies from some place in the neighborhood where there is a case of typhoid fever. Both these diseases are now well understood to be germ diseases. It is comparatively easy to avoid typhoid fever.

It is not so easy to avoid consumption, for the reason that there is more or less tuberculosis among the cattle on a considerable per cent of the farms. Where there is tuberculosis among the cattle, there is tuberculosis among the hogs and the chickens. In fact, the entire country is so infected with tuberculous germs that the main effort should lie in the direction of so increasing the vitality of the individual that the system can throw off the infection.

The reason why so many farmers' children, and especially girls, are affected with tuberculosis is that there is lack both of sunlight and ventilation in the average farm home. This could be easily remedied, if farmers only understood the necessity for pure air and sunlight, as well as pure food and exercise. While no lack of ventilation will in itself produce tuberculosis, the lack of vitality due to an insufficient supply of fresh air, especially at night, renders the system unable to resist the germ when introduced.

The primitive country home was better ventilated than the modern house. It was made of timber, much of it green, which, therefore, shrank and there was no especial need of providing for ventilation, particularly as most of them had fireplaces. In my boyhood it was a common remark that a new house meant a death in the family. This was probably a superstition, and yet most superstitions have a foundation of fact. The fact was that the builder built then, as he does now, for economy of

heating, and for books, and never thought of the necessity of supplying plenty of fresh air, especially in the sleeping rooms at night. All this is easily remedied, and we briefly sum up what is essential to the sanitary country home, a home in which the boys and girls may grow up into vigorous and sturdy manhood and womanhood.

First, there should be proper drainage to the cellar, and this drainage should be put in before the foundation of the house is laid. The tile should be two feet under the cellar floor. The cellar should be cemented. It is useless to cement an undrained cellar for the pressure of the water outside in a wet season will break the cement.

Second, provision should be made for ventilation, particularly of the sleeping rooms. A chimney in the center of the house, commencing in the cellar, with a brick or two left out at the bottom and also on each floor, and the opening covered with perforated iron, will draw off the air which has been deprived of its oxygen by breathing. Air can be introduced by lowering the top sash of the window, or by using muslin instead of a sash, thus admitting pure air without a draft.

Where there are modern improvements—and sooner or later these will be found in all country homes—including bathroom and sanitary closet, the waste substances can be washed into a septic tank, from which the water flows chemically pure. (It is not necessary to explain the philosophy of this now.) Meanwhile until these modern improvements are introduced, the privy should be removed from the vicinity of the well, placed lower than the well, if possible, and with no connection by reason of sandy streaks in the under soil. As long as farmers are obliged to use surface wells, these should be curbed with stone or brick and protected from wash and the entrance of small animals.

One other thing is quite essential, and that is that the farm home should be screened against flies. Flies breed in dung, a fact well known to the ancient Philistines, who worshipped Beelzebub, the fly-god. The modern Beelzebub loves filth, the sore shoulders of horses, and the privy vault, and has the bad habit of not wiping its feet. The hauling out of the manure as fast as made, the closed privy disinfected daily with dry earth, or copperas or lime, will frequently save the family from typhoid fever, to say nothing of adding to the peace and comfort which should be in every farm home.

If there were no other reasons involved and no other considerations than the scarcity of labor, we cannot afford the loss suffered by the farm folk by reason of lack of sanitation in the farm home.

I H C Hay Presses

Power on I H C hay presses is applied with a pull instead of a push. The presses are so designed that they give greater pressure with the same amount of power than any other presses of equal size.

I H C 2-horse Pull Power Hay Press Telescoped for Transportation

I H C hay presses are made with three sizes of bale chambers:

1-horse press, 14x18 inch bale chamber.

2-horse press, 14x18 inch, 16x18 inch, 17x22 inch bale chamber.

Motor baling press, 14x18 inch, 16x18 inch, 17x22 inch bale chamber.

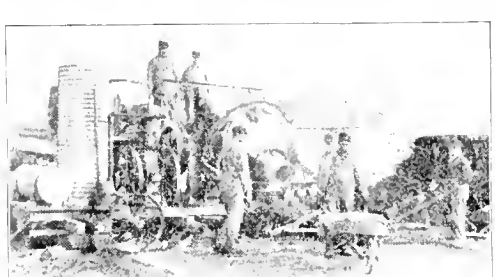
Motor presses are equipped with 3, 4 or 6-horse power I H C gasoline engines.

Mixing Concrete on the Farm

Concrete is the farmer's new ally and friend. With the aid of Portland cement and gravel, or broken stone, he mixes a soft, muddy slush, pours it into forms, it hardens—behold! he has made stone that, if the ingredients are rightly proportioned, will endure as long as time. Thus watering troughs, foundations, floors, silos, dairy rooms, water tanks, and a thousand useful things can be made.

Any one can make good concrete. It needs care. Use only the best Portland cements; they are all cheap now. Get the right proportion of cement to your gravel or broken stone. Most farmers can find gravel naturally intermixed with sand. Such stuff makes good concrete when the right amounts of cement and water are added and it is mixed well. One must add cement enough to fill all air spaces between the grains of sand and thus make the concrete dense. With gravel and sand mixed by nature a proportion of 1 of cement to 5 of gravel, by measure, is good for most work. For surfacing or work requiring extra strength it may be made stronger by adding a little more cement.

Make a measuring box that will hold exactly one-half cubic yard, with no bottom. If it is made of 12-inch boards, it may be 40½ inches wide and 48 inches long, inside measurement. This holds just one-half a cubic yard. Lay this down on a board platform, or on the hard, smooth earth. Throw in a few inches of gravel, then empty a sack of cement, spreading it around evenly, then heap in more gravel, then another sack of cement. Fill it a little less than level full for a one-fifth mixture. Lift off the box and set to one side. Shovel it from this pile to a new place at one side. Take each shovelful exactly from the bottom of the pile and lay it exactly on the top of the new pile. Be careful about this, for on it depends the thoroughness of your mixing. Make the new pile as tall and cone-shaped as possible, and take each shovelful exactly from the bottom of the first pile. Then move the stuff again back where it lay, using the same exact care. One will see the reason for this method as he does the work; every shovelful laid on the peak of this cone-shaped pile rolls down on each side and distributes the particles. Shovel it three times. Then wet it down by sprinkling on one side with a large sprinkling can. Don't wash the cement off the pebbles; hoe the moistened stuff down as fast as it is wet. Make it quite wet, but never sloppy—as wet as you can make it and have all the water well soaked in—no water on top of it. Then hurry it into the forms. Don't let it set while you go to dinner; it won't be so good. As you put it in the forms churn it with a board or stick; agitate it to get all the air-bubbles out. Keep it moist. It takes ten days for concrete to get hard, and for thirty days it ought to be kept moist, if possible. It is about as strong as ever it will be in forty-five days. Cover concrete fence posts with moist earth or sawdust or sand so they can't dry out till they are seasoned. Be sure they are well reinforced with steel, well placed. No "expert" is needed to do concrete work on the farm, only good common sense and a handy man to build forms.



I H C engine operating a concrete mixer

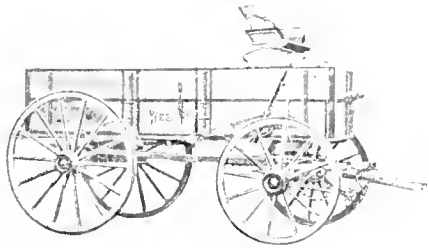
Points of a Good Farm Wagon

Wood Stock. The wood stock is really the foundation of the wagon so that it pays to know what stock is put into the wagon you buy.

Axles.—Black hickory of the highest grade makes the best axle.

Running Gears.—Oak should be used throughout and the parts should be soaked in boiled oil to protect them from moisture. The parts should be carefully ironed.

Skeins.—Skeins should be heavy and designed especially for strength, width of throat, and correct taper.



Weber Farm Wagon

Skein Boxes.—The skein boxes should fit the skeins closely and accurately to retain the grease and to produce light draft.

Hubs.—Hubs should be made of the best quality white oak as first choice or Maine birch as second choice. They should be carefully air seasoned to prevent splitting and checking as far as possible.

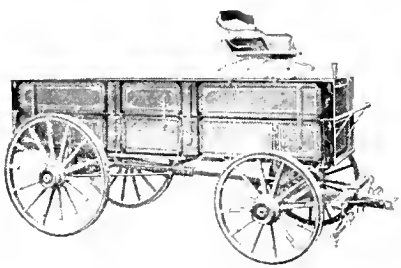
Wheels.—A-grade hickory or oak spokes only should be used and they should be driven in hot glue. Rims should be of oak and all parts should be thoroughly soaked in boiled oil before the tires are set to exclude moisture and prolong the life of the parts.

Tires.—Tires should be steel and set while hot to prevent them coming loose.

Boxes.—Boxes should be very carefully made from the best quality of box board lumber. The bottom should have a double thickness of material where it rests on the front and rear bolster, and bottom boards should be tongued and grooved. It should be carefully and thoroughly ironed.

Painting and Finishing.—No expense should be spared in the preparation of the paint. Good painting lends attractiveness and durability.

Warranty.—By all means buy a wagon which is warranted by a responsible company. Any breakage which may occur within a year from the date of purchase, and which is due to defective workmanship or material, will be made good.



Columbus Farm Wagon

Weber and Columbus farm wagons and trucks embody every point of a good farm wagon enumerated above. They are conscientiously made of good, thoroughly seasoned material of ample strength. Every Weber and Columbus wagon carries with it an International Harvester Company of America warranty, which is recognized the world over as the best to be had. When you purchase either a Weber or Columbus wagon you get a good wagon.

Look for the I H C trade mark. It is a seal of excellence and a guarantee of quality

Modern Dairy Barns and Silos — Courtesy Breeders Gazette, Chicago

Building Silos

In building silos there are several very important considerations which must be kept in mind.

First: The silo must be air-tight. If it is not air-tight, fermentation will set in and the bacteria will multiply so rapidly that the mass will become heated and acid will form. Putrefactive bacteria will then carry on the work of the acid bacteria and the silage will rot.

Second: The silo must have smooth perpendicular walls, so that the mass can settle without forming cavities along the sides. If cavities form, air spaces occur, which will cause surrounding silage to spoil.

Third: The walls of the silo must be rigid. There is a lateral pressure in the silo when the fodder settles, and if the walls are not rigid they will spring, thereby admitting air and causing decay of the silage.

Capacity of Silos: As a rule not over forty pounds of silage should be fed daily per head. Forty pounds is the average weight of one cubic foot of corn silage. Assuming that a cow is fed this amount on an average daily during a season of 180 days, we find that about 180 or 190 cubic feet will be allowed for each head, or approximately four tons, because one ton of silage will occupy fifty cubic feet. If a farmer is feeding ten cows he should have a silo that will hold forty tons, if feeding twenty-five cows, he should have a silo that will hold one hundred tons. The capacity of rectangular silos is easily figured, as it is only a case of multiplication. The capacity of round silos, however, is not as readily computed, so that the table below gives at a glance the approximate number of tons that can be stored in a round silo from ten to twenty-six feet in diameter and from twenty to thirty-two feet deep.

Table Giving the Approximate Capacity in Tons of Cylindrical Silos for Well Matured Corn Silage

Depth of Silo—feet	Inside Diameter of Silo—feet												
	10	12	14	15	16	18	20	21	22	23	24	25	26
20	26	38	51	59	67	85	105	115	127	138	151	163	177
21	28	40	55	63	72	91	112	123	135	149	161	175	189
22	31	43	59	67	77	97	120	132	145	158	172	187	202
23	32	46	62	72	82	103	128	141	154	169	184	199	216
24	34	49	66	76	87	110	135	149	164	179	195	212	229
25	37	52	70	81	93	116	143	158	173	190	206	224	242
26	38	55	74	85	97	123	152	168	184	201	219	237	257
27	40	58	78	90	103	130	160	177	194	212	231	251	271
28	42	61	83	95	108	137	169	186	204	223	243	264	285
29	45	64	88	100	114	144	178	196	215	235	256	278	300
30	47	68	93	105	119	151	187	206	226	247	269	292	315
31	49	70	96	110	125	158	195	215	236	258	282	305	330
32	51	73	101	115	131	165	205	226	248	271	295	320	346

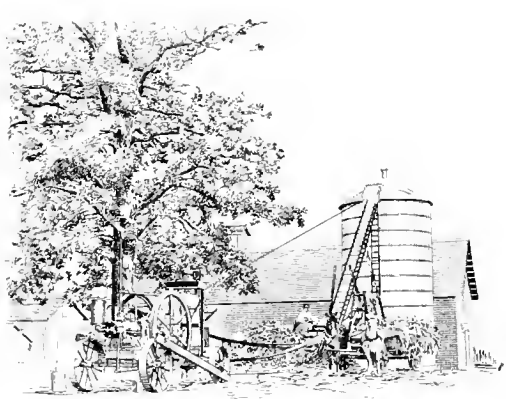
The table below shows at a glance how much silage is needed for dairy herds of six to fifty heads, the size of silo needed, and the number of acres to plant to corn in each instance. It is assumed that forty pounds of silage will be fed per day per head for a season of 180 days.

Size of Silos Needed—(Harder)

No of Cows	Estimated consumption of Silage Tons	Size of Silo needed		Average Acres of Corn needed	No of Cows	Estimated consumption of Silage Tons	Size of Silo needed		Average Acres of Corn needed
		Diam Ft.	Height Ft.				Diam Ft	Height Ft.	
6	20	10 12 14	16 22 28	1 to 2	36	144	14 16 18	38 29 23	5 to 6
9	30	11	24	2 to 3			17	29	
13	45	12 13 14	29 25 22	3 to 4	42	168	15 16 17	35 31 29	6 to 7
21	74	12 13 15 16	37 32 29 24	5 to 6	48	192	16 17 18	35 31 29	7 to 8
25	90	12 13 14 15 16	38 33 29 27 25	6 to 7	54 56	216 180	18 19 17 18	32 29 38 34	8 to 9 7 to 8

Form of Silos

Round silos seem to be more satisfactory than square silos for several reasons. In the first place, one of the essentials in silo building is that there shall be a minimum of surface and wall exposure of the silage, as both the cost and the danger from losses through spoiling are thereby reduced. Round silos can be built cheaper than square ones, because lighter material may be used. Wooden silos seem to be more desirable than any other kind, because they are easier and cheaper to construct than concrete or brick silos. It has been estimated that round silos can be constructed for about fourteen cents per square foot of surface.



I H C Famous portable engine operating a fodder cutter

Up-to-Date Dairying

W. D. Hoard, Editor Hoard's Dairyman
Fort Atkinson, Wis.

In what does it consist? What are meant by the words used? "Up-to-date" means doing a thing with the best knowledge, the best methods known to the present time. In dairy farming, as in all things else, there are all sorts of men. Some are following the same ideas about cows, about stables, about feeding, about farm management, that prevailed with their fathers sixty years ago. As matters stood then this was all well enough. Sixty years ago all grain was cut by the cradle, except such as was cut with the hand sickle. What would be thought of a farmer who adhered to the methods and ideas of grain farming in vogue sixty years ago? But we know of plenty of farmers who have no better ideas about the dairy cow than existed then; who still use the rigid stanchion in their stables, just the same as was used sixty years ago, who have the same notions about light and pure air in the stable that prevailed among the most ignorant farmers of the nineteenth century; who reject all knowledge concerning bacteria or disease germs; who sneer at the idea of tuberculosis; who disbelieve in the silo, and who cannot be prevailed upon to accept or try any of the conclusions or methods of modern thought or study.

The average farmer is very conservative. Why? Largely because of a very limited range of reading, study, contact, and observation. St. Paul's injunction to "Prove all things; hold fast to that which is good," is exchanged for holding fast alone to that which he learned in his youth. But up-to-date dairying should have a definition. What does it require?

1. It requires the right kind of a farmer. A man who recognizes what science has to give, what it is contributing to the well being of the man behind the cow. It requires a reading, thinking student of the farm and the cow. A man with an active, alert mind ready to seize hold upon all the advantages of modern knowledge. This is no place for the farmer who sneers at "book farming," who thinks that the profit of dairying is enhanced in proportion as the farmer is ignorant of dairy principles. Some men have a way of justifying their bad practices and comforting themselves in their ignorance by just that kind of sneering. But it is the cry of weakness, not strength.

2. It requires next an intelligent idea of the modern dairy cow; how to breed her, house, and care for her, how to feed her on a daily ration that will help bring out and develop her dairy capacity for larger milk and butter production. There is a wonderful difference in cows. This can be seen in the same herd and especially by comparison of the several herds in the same creamery neighborhood. Hoard's Dairyman has sent out agents and made a special study of 2,100 herds, numbering over 28,000 cows in 13 states from New England to Iowa and Minnesota. A special study was made of the owners of these cows, the dairy intelligence they possessed, the breed of cows they kept, the way they fed them, housed them, and cared for them; and finally just what it cost each farmer to keep his cows. Then the agent went to the creamery and obtained the exact figures of the yield of each herd in milk and cash. From this we figured just what these cows earned for every dollar's worth of feed they consumed. Here we could see the part that brains played in each herd. When we struck the reading, thinking farmer, one who used his mind as well as his hands, the profits went up in some cases to 300 per cent for each dollar's worth of feed. When we struck the ignorant, non-reading farmer, the profits went down in some cases to a loss of fifty cents on every dollar's worth of feed consumed.

3. It requires a teachable spirit on the part of the farmer, a willingness to admit his own ignorance and a determination to put sound knowledge in place of ignorance. No class of men in this country to day need the stirring and stimulating effect of better study of their own business as do the farmers. The proof of this is seen in the widespread loss of fertility in nearly all of the farms from the Atlantic coast to the great lakes. Who is responsible for this kind of farming that in the past fifty years has wasted the natural resources of soil over so wide a stretch of territory? No one else but the American farmer. When the Commissioner of Agriculture of the state of New York puts out the statement that that state has lost over $168,000,000 in 30 years through the decline in the price of farm lands, it is time to ask the question: "Would the New York farmers thus have impoverished themselves and their state if they had understood this business of farming as they should? In every country in Europe the price of farm land is maintained if fertility is maintained. New York farmers have done no worse than Ohio and Indiana farmers, and Illinois, Wisconsin, and Iowa farmers are following in their footsteps as fast as they can. Everywhere we see the depleting effects of bad, ignorant farming.

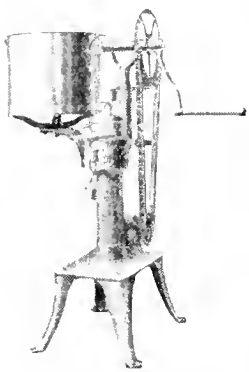
4. There must be a closer study of dairy economics in the use of cows. In the 28,000 cows referred to in Hoard's Dairyman cow census, fully one-third were kept at a loss. Think of a great body of farmers imposing a tax of 33 per cent on themselves because they will not study the economics of their own business! Don't you think it requires brain action to comprehend the principles of up-to-date dairy farming? Thousands upon thousands of farmer patrons of creameries are putting themselves to all the expense of up-to-date dairying and yet they persist in keeping a low grade class of cows. The first step towards improvement is the purchase of a pure bred bull of some one of the dairy breeds. Then the farmer will put himself in the way of having profit-bearing tools for his use.

Here is an example of what up-to-date thinking will do in the way of increasing the profit of cows. In this (Jefferson) county is a herd of cows which the owner has developed practically in the past twelve years. He has followed enlightened ideas in every particular. This herd of 29 cows last year averaged 8,234 pounds of milk and 420 pounds of butter fat. The average price of butter fat at the local creamery the past year was 32 cents a pound. So if the cream of this herd had all been taken to the local creamery they would have earned in gross $134.40 per cow. The cost of keeping of this herd was not to exceed fifty dollars per cow. This leaves $82.40 as the net return per cow when considered from the creamery standpoint. Yet all about this herd are farmers whose herds did not average more than $50.00 to $60.00 per cow with cost of keeping fully $40.00 per cow. Compare the satisfaction of doing business as it should be done at a profit over cost of feed of $82.40 as against $10.00 or $20.00 per cow.

In the one case up-to-date ideas of dairying are practiced at every turn. In the other, notions, that are not ideas, control the farmer. In this same herd are seven two-year-old heifers whose average production the first year of their milking was over 8,000 pounds of milk and 405 pounds of butter fat. That shows what a skilful use of breeding principles and close adherence to up-to-date methods will do in the way of profit. Aside from profit there is vastly more of satisfaction in carrying on a farm and dealing with the problem of dairying if our intellect, our ambition, our taste, are enlisted. In a word, this means progressive ideas and labor—that is, up-to-date dairying. But up-to-date principles must be recognized and obeyed.

What an I H C Cream Harvester Will Do

We are all anxious to make as good a living as possible with no more work than necessary. It seems strange that so many farmers and dairymen should continue to practice antiquated methods of handling the dairy product when the new way—the separator way—eliminates so much of the work, actually transforming drudgery into work which cannot even be called unpleasant.



Dairymaid Cream Harvester, made in four sizes

In the matter of convenience and ease of operation, as well as the time involved, a hand separator is far more desirable than any of the old methods. The bother of setting countless crocks and pans, the primitive and wasteful method of skimming off the cream, and finally the work and worry of washing the vessels—this is all done away with by the use of a properly constructed hand separator. Besides saving time, work, and worry, an I H C Cream Harvester will pay for itself in one season if enough cows are milked. How?

Bluebell Cream Harvester, made in four sizes

First, by returning more butter fat.

Second, by giving butter fat which will always bring the top market price.

Third, by giving you fresh, warm, sweet skim milk valuable for feeding.

Fourth, by reducing the cost of hauling the product to market.

Fifth, by enabling you to keep more cows without additional labor.

Corn

P. G. Holden, Vice Dean and Professor of Agronomy, Iowa Agricultural College, Ames, Iowa

"More corn of better quality on every acre of ground" is the motto of every corn-grower in Iowa. Let us each strive to grow more and better corn this year than we did last. This is the secret of success. This will make us love our work. Drudgery is work without thought, without interest, without love for it. "The man who can make two ears of corn, or two blades of grass, grow on the spot where only one grew before, would deserve better of mankind and render more essential service to the country than the whole race of politicians put together."

The average yield of corn in the United States to-day is about 25 bushels per acre. It can be increased to 30, then to 35, and ultimately to 50.

To produce a good crop of corn we must have good land, good seed, good preparation of the ground and care of the crop a good season, and last but by no means least, a good man. Important as these things are

I must omit from this short discussion all of them except the question of Good Seed.

If I owned the farms of the United States and could give but four orders regarding corn, those orders would be as follows:

1. That **every ear of corn** intended for planting **be tested,** that is, not less than six kernels (better ten) be taken from each ear and sprouted and all weak and bad ears discarded.

2. That every ear intended for planting be **harvested before the fall freezes** and properly preserved.

3. That the **corn be graded** and the planter tested and made ready to drop the proper number of kernels.

4. That the corn be **improved by selecting** for the average farm, say 100 of the best ears and planting them on one side of the corn field. The seed for the following crop to be selected in the fall from the part of the field where the best seed was planted.

P. G. Holden

Notice that all of these are things which **can be done** by every one, that they cost practically nothing except a little time and work; that no loss can possibly come to any one from properly testing, harvesting, grading, and improving his seed.

It is difficult for us to comprehend the enormous wealth which would be added to the United States if these four orders were carried out by every farmer, and let me again add that they can be carried out by every one and at practically no increased expense.

To illustrate: I presume that there is hardly a person in Iowa but who will agree with me that if every ear of seed corn had been tested this spring before planting and the weak and bad ears discarded so that nothing but strong seed was planted, it would have added on the average not less than 10 bushels per acre to the crop. In one average county of Iowa with 90,000 acres planted to corn annually there would be an increase of 900,000 bushels worth $450,000. But there are 99 counties each growing an average of 90,000 acres of corn.

It is true that the seed this year was much worse than usual owing to the sappy condition of the corn last fall, the early freezes, and the unusually severe winter weather, but I am perfectly safe in saying that the annual average yield for Iowa could be increased 10 bushels above the present if the four orders given above were carried out on every farm.

Testing Every Ear of Corn

There are two fundamental reasons for testing each ear.

1. It enables us to discard those ears which have been weakened or killed by freezing, mould, or premature sprouting in the fall.

2. It enables us to discover the scrubs or runts and discard them. Let me here caution you against the delusion which some men have that they can tell whether or not corn will grow by just looking at it or handling it.

How to Make the Test

Lay out the seed ears side by side on tables or planks arranged for the purpose. Go over these carefully and discard the poorer ears. From

each of the remaining ears remove two or three kernels with a pocket knife, placing them at the butt or tip of their respective ears. From a study of these kernels you will be able to discard many more ears, some or all of whose kernels are mouldy, frozen, barren, immature, or are too shallow or too deep, too wide or too narrow, or whose germs are small indicating poor feeding value, weak constitution, etc.

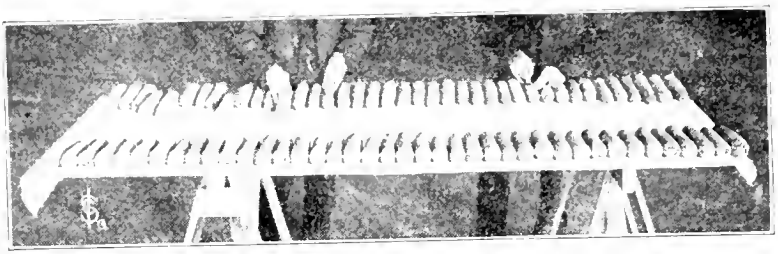


Plate No. 1

From each of the remaining ears remove 2 or 3 kernels. Examine these kernels and discard those ears which have poor kernels and thus save the work of testing ears which show from appearance that they are not fit to plant.

The remaining ears should now be arranged on the planks side by side for the final germination test. Remove not less than six, better ten kernels, from each ear and place them in the germination box to sprout. The places or squares for the kernels in the box should be numbered to correspond to the number of the ear from which the kernels were taken. This will enable us to discard those ears whose kernels in the box fail to grow or show only weak sprouts. Think for a moment what it means to use one bad ear for seed: 000 missing places, equal to 300 hills, —on an acre, not less than 4 bushels of corn. It means wasted land and wasted labor. Then, too, the weak and sickly sprouts will betray many other ears which are really scrubs and can be discarded, ears which yield 10, 20, and sometimes 30 bushels less per acre than others.

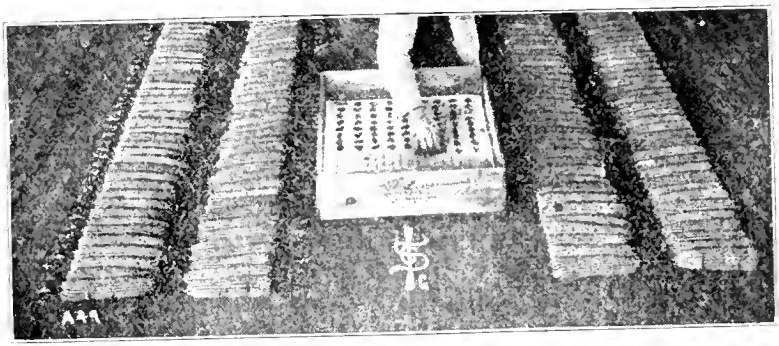


Plate No. 2

Putting the kernels in the germination box from ear No. 1 in square No. 1. From ear No. 2 in square No. 2, and so on.

It is certain that not less than 35,000 farmers tested every ear of seed they planted this spring in Iowa. Every farmer who grows corn, whether he lives in the north or south in the east or west, should test each ear to be planted. It is proverbial that a "runt pig" is always a "runt pig." In the struggle for existence he is at a disadvantage at every turn. He is crowded from his comfortable sleeping place and rooted out of the feed trough. So it is with the 800 or 900 weaklings from an ear. They are in reality runts, scattered there and here throughout the field, and robbed of plant food, moisture, and light, by their more vigorous growing brothers.

Often they are barren, i. e., produce no ears, but these stalks do produce tassels with millions of pollen grains which drift over the field and fertilize the ears of the good stalks. In other words, these barren stalks become the fathers of millions of kernels of corn in the field, thus perpetuating their weakness. Remember that you cannot injure the seed by testing it. You cannot possibly lose. It costs nothing but a little time and labor. This work can and should be done in the winter before the spring work opens up. In this way none of the other farm work is neglected.

How to Make the Germination Box

One of the simplest and best methods for testing each ear of corn is by the use of what is known as the sawdust germination box.

Make a box 3 inches deep and 30 x 30 inches in size; fill it about half full with moist sawdust and tamp firmly with a brick. Rule off a piece of good white cloth (sheeting) into squares 2½ x 2½ inches each way, checker board fashion, and number the squares 1, 2, 3, etc. Place this cloth, which should be the size of the germination box, on the sawdust and tack it to the sides and ends of the box. Lay the ears of corn to be tested side by side on the floor or table. Remove six kernels from six different places in ear No. 1 and place them in square No. 1 in the germination box germ side up and crown pointing from you. Then remove six kernels in a like manner from ear No. 2 and place in square No. 2 in the germination box, and so on. When the squares in the germination box are all filled lay a piece of good cloth over the kernels and dampen by sprinkling water over it. Place over this a cloth considerably larger than the box and fill the box with moist sawdust, tamp with a brick or board or tread on it with your feet until firmly packed on top of the corn. Keep the box in a place where it will not freeze; raise the upper side of the box or the side toward which the crowns of the kernels point, 3 or 4 inches; the stem sprouts will then grow up and the root sprouts down, thus making it much easier to read the test. It requires about eight days for the corn to germinate. At the end of that time roll back and remove the cloth containing the top layer of sawdust. Now remove the second cloth as carefully as possible and examine the six sprouted kernels in each square.

The above box when completed and set away for germination may be described briefly as follows: Two inches of sawdust packed firmly in the bottom of the box. On this is laid the cloth ruled off in squares, then the kernels laid in the squares, a second cloth spread on the kernels and dampened, then a third cloth much larger than the box, on which is placed 2 inches more of damp sawdust packed firmly. The edges of the larger cloth may be folded over on the top of the sawdust.

Important Things to be Remembered

Soak the sawdust at least 2 hours—better, over night.

Use a good quality of sheeting for the cloth that is ruled off in squares and also for the cloth covering the kernels.

Do not use a cheap, porous grade of cloth, as the sprouts will grow through it and greatly interfere with the work.

Leave a 2-inch margin around the edges of the box to prevent freezing and drying out.

Make the squares to receive the kernels 2½ x 2½ inches.

Never use the box more than once without thoroughly scalding both the sawdust and the cloths.

To insure accurate reading the stem sprouts should be at least two inches long when examined.

Throw out all ears which show weak germination as well as ears whose kernels fail to grow.

Do not *guess* that an ear of corn will grow and grow strong. *Test* it and find out before you have wasted upon it a whole year of labor and the use of your land.

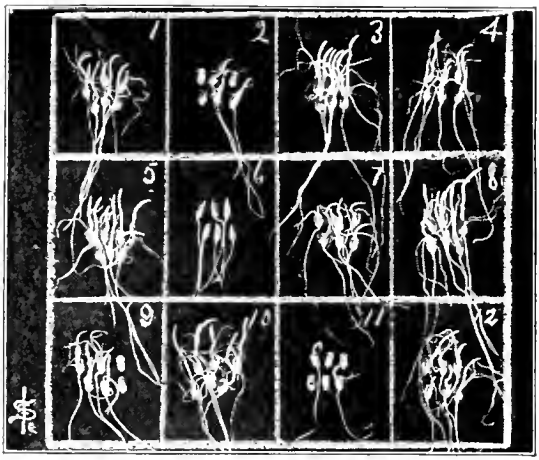


Plate No. 3

Test 6 kernels from each ear and discard the bad and the weak ears.
Ears 3, 5, 8, and 10 are strong.
Ears 1, 4, 7, and 12 are only fair.
Ears 2, 6, 9, and 11 should be discarded.
Is there anything more foolish than to guess that 800 or 900 kernels on ears like 2, 6, 11, etc., are all right, when we can find out at practically no expense?

You say that your field was infected with cut worms, grubs, etc. How much more need then of strong seed that you may have something left for yourself after feeding the worms. You say that the spring is cold and backward and that this accounts for your poor stand of corn. All the more need then of strong seed. Tens of thousands of farmers in Iowa this year have good stands of corn, while there are tens of thousands of their neighbors with poor stands, and tens of thousands of others who are replanting, which is always most discouraging and most disappointing in results.

You say that your ground is poor and foul; that the season was too wet, or too dry, and the care of the crop bad. You know as well as I do that strong, vigorous plants will stand these unfavorable conditions better than poor, weak ones. If your land is rich, well prepared, and the season good, how absolutely foolish it is to go out to this field and plant it with poor seed, much of which fails to grow or gives only weak stalks.

The time is past for guessing that the 900 kernels on an ear are strong. We must know before the year's labor is put upon them.

During the past seven years more than 10,000 fields of growing corn have been examined. In no year has the average exceeded 72% of a perfect stand. It has been as low as 64%. The average has been 67 or 68% of a stand. In other words the average corn grower spends three hours of every day that he works in the corn field traveling over plowed ground that produces nothing.

There are many causes which contribute to a poor stand of corn, yet every one who has given the question much attention will agree with me that poor seed is by far the greatest cause of the poor stand.

Better Care of Seed Corn

We must take better care of our seed corn. We must harvest it in the fall before the severe freezes. In Iowa and the north half of Illinois the last 10 days in September will be about right. It should be hung up, not piled up. It is circulation of air that is needed and not heat. Especially is this true during the first two weeks after the seed is harvested, while it is still sappy. There is no place better than an up-stairs room or attic, where the windows can be left open until the seed is dry. Again I will repeat, *hang it up, don't pile it up.*

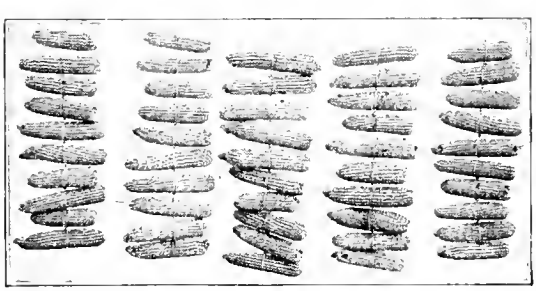


Plate No. 4

Plant the 100 Best Ears Together

One hundred or so of the very best ears should be selected in the spring when we are testing our seed, shelled, and mixed together. This best seed which comes from the finest ears should be planted on one side of the corn field. Next fall from this seven or eight acres should be selected the seed for the following crop. Is there any good reason why any of us should fail to do this? We all recognize the great law that "like tends to produce like." In planting the field it takes no longer to put this best seed in our planter and plant it out first.

Value of the Disk Harrow

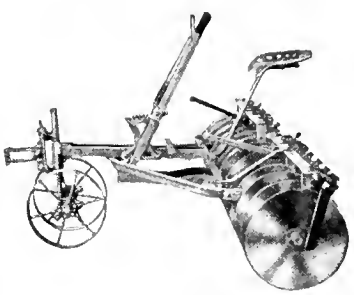
The disk harrow is the most valuable implement that any farmer can have—it does not matter whether he farms 40 acres or 40,000 acres. There are certain soil conditions which must be overcome if good crops are to be raised, and the disk harrow is the only implement that has yet been invented which will overcome these conditions in a satisfactory manner. The raising of crops depends upon the physical condition of the ground, temperature, and moisture. It is essential that the farmer should understand how to conserve moisture, particularly in dry years. There may not be rainfall enough in one season to raise a large crop, yet if the moisture has been properly conserved, no farmer need fear a failure.

The principle of conservation of moisture is based upon capillary attraction. In order that capillary attraction may take place, the ground must be so compact that each particle of soil comes in contact with the next one above it. When the ground is dry, hard, and sun-baked the particles of soil are in the best possible condition for capillary attraction, consequently moisture escapes rapidly. Disking this ground forms a mulch of fine loose dirt which breaks up capillary attraction, thus preventing undue escape of moisture from the surface, but in no wise interfering with the rising of the subsoil moisture near to the surface. This mulch of dirt also permits the ground to drink in to a much greater extent than hard and sun-baked soil, the surface water occasioned by showers, and conserve it in the lower strata for future use.

If ground is disked before it is plowed the fine mulch of dirt turned under with the turned over furrow and the ground underneath forms the means of capillary attraction, thus making a much better seed bed than is possible when the ground is turned without previous disking. For example, when plowing corn stalk ground which has not been disked, the corn stalks and trash form air spaces so that capillary attraction cannot be formed with the under layer of ground. A compact seed bed cannot be made and the moisture in the subsoil is prevented from rising to nourish the roots of the growing plants. This same thing is true of any kind of ground which is not mellow.

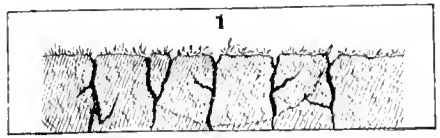
Suppose in a dry fall a field of stubble land has been cleared of shocks and is ready for fall plowing. If the farmer would disk the stubble thoroughly as soon as the shocks are removed, a loose mulch would be formed which would help to avoid excessive evaporation of that moisture which remains in the soil, allow the moisture in the subsoil to accumulate near the surface, and prepare the surface to absorb rains readily, thus enabling the farmer to plow in a field when, under ordinary conditions, the ground would be too dry and hard.

One year may be too wet to grow good crops, another, too dry, and the third, most favorable. The use of a disk harrow in any one of these seasons is not going to hurt the land a particle, even if it is not necessary, and it may do a great deal of good. Thus the farmer is not taking any chances when he disks, and he is taking grave chances if he does not.

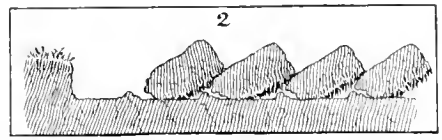


Disk Harrow

The I H C line of spring implements includes many styles and sizes of disk harrows; also spring tooth, combination and peg tooth harrows, and cultivators.

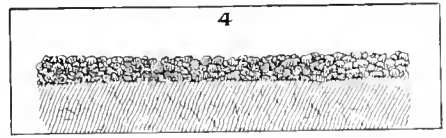


View No. 1 represents hard, cracked-open soil that has not been tilled, showing how clod formation takes place and the depth at which moisture can escape from the ground.

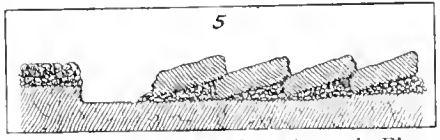


View No. 2 represents ground plowed, showing air space between the turned over slice and the ground beneath. This air space prevents a firm and compact seed bed from being made and stops capillary attraction with the sub-soil.

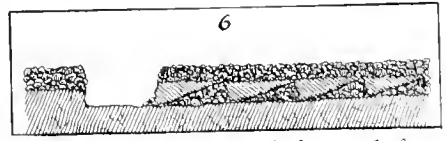
View No. 3 is plowed ground disked. Note that the air spaces still exist. This is what happens when corn stalk ground is plowed without first being disked. Corn stalk roots and other trash prevent the ground from becoming compact and firm.



View No. 4 is ground disked before it is plowed. The mulch of dirt breaks up capillary attraction so that moisture cannot escape from the top of the ground. This permits what moisture there is in the ground to come close to the surface.



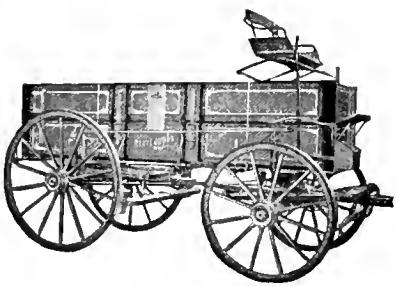
View No. 5 is the disked surface shown in Fig. 4 plowed. Disking the ground before it is plowed leaves a mulch of fine dirt which fills up the air spaces left between the furrowed slice and the ground beneath, thus making the foundation for a firm and compact seed bed.



View No. 6 illustrates disking before and after plowing. When the ground is treated in this manner the seed bed becomes compact and firm in a much shorter time and forms a means of capillary attraction. This treatment puts the ground in such condition that whether the season be wet, dry, or normal, the farmer is not taking any chances.

Steel Wagons

First-class wood stock is becoming more and more difficult to obtain It now seems a question of only a few years until the supply of available material will be exhausted. Wagon manufacturers realize this and are turning to steel rather than run the risk of losing their reputation by using poor wood stock. While the high standard of quality found in I H C wood wagons has been maintained, the New Bettendorf and Steel King wagons have been designed to meet the demand for a steel gear. The following are a few of the features which are making the New Bettendorf and the Steel King famous:



New Bettendorf Steel Wagon

Gears—New Bettendorf gears are made of flawless steel without a bolt being used in their construction.

A removable sleeve reinforces the axle, relieves the skein of all wear, can be replaced when worn, and makes the axle practically everlasting. Steel King gears have reinforced axles and skeins and the bolsters and axles are equipped with steel top plates. Bolsters are adjustable.

Wheels—Oak hubs, oak and hickory spokes, oak rims thoroughly seasoned and soaked in oil, properly tired and banded, correctly portioned and assembled, and artistically finished form the wheels that New Bettendorf and Steel King users appreciate and recommend.

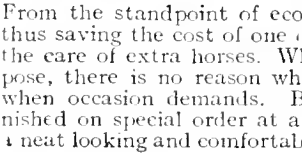
Boxes—Steel King and New Bettendorf boxes are constructed of the best thoroughly-seasoned, air-dried wood stock.

Finish—Paint and varnish of the best quality, applied by expert wagon painters who understand their business in all its details, protect the fibres of the wood stock, and add not only durability but attractiveness.

Guarantee. New Bettendorf and Steel King wagons are manufactured by the International Harvester Company, which is in itself a guarantee of quality and assurance of long and continued service. Every I H C wagon bears the trade-mark. Look for the I H C trade-mark—it's an assurance of satisfaction.

International Auto Wagon

The International auto wagon is designed for use over country roads. Farmers will find an International auto wagon valuable for quick trips. It can be used for errands while the horses remain at work in the field.



The box is large and roomy, and can be used for carrying seed, produce, or tools.

Dairymen and truck farmers use an International to make quick deliveries, saving time, and enabling them to give better service and serve more customers. From the standpoint of economy it will do as much work as two rigs, thus saving the cost of one driver as well as the expense connected with the care of extra horses. While this car is designed for commercial purpose, there is no reason why it cannot be used as a pleasure vehicle when occasion demands. By adding rear seat and top, which are furnished on special order at a small additional price, this wagon becomes a neat looking and comfortable pleasure car.

Making a Road Drag

A good road must be oval, hard and smooth. It is possible to make a road with these three attributes by the use of the split log rod drag illustrated and explained herewith.

No matter how bad the road material may be, a good road is possible if the drag is used. Clay, for instance, makes an almost impassable road when water soaked. If the drag is used on this material, the clay is molded and tamped into a form that bakes on the surface and sheds water instead of absorbing it, making one of the most desirable dirt roads. If the road is oval, hard, and smooth, it will shed water.

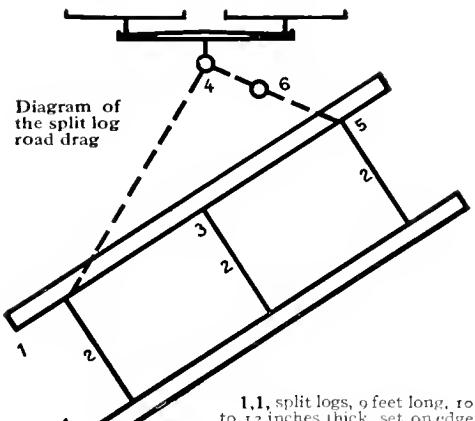


Diagram of the split log road drag

1,1, split logs, 9 feet long, 10 to 12 inches thick, set on edge 30 inches apart, both flat sides to the front. **2,2,2**, strong oak or hedge bars, the ends of which are wedged in two-inch auger holes bored through the logs or slabs. Dotted line, chain or strong wire. **4. 6**, rings to connect double-tree clevis. Hitch at **4** and stand at **3**, on a plank laid at the cross-bars, for ordinary work; or hitch at **6** and stand at **5** for ditch cleaning or to make the drag throw more dirt to the left.

It has been estimated that the road drag invented by D. Ward King, Maitland, Mo., has made model roads out of almost impassable clay ones of the corn belt, and at a cost of less than $10.00 per mile.

The best time to use the drag is in spring. By addressing the State Boards of Agriculture of Kansas and Missouri, complete descriptions of this drag may be obtained.

Information for Builders

Wood and Lumber

A cord of wood contains 128 cubic feet. To ascertain how many cords there are in a pile of wood, multiply the length by the height, and that by the width, and divide the product by 128.

To ascertain the circumference of a tree required to hew a stick of timber of any given number of inches square, divide the given side of the square by .225, and the quotient is the circumference required.

Round timber, when squared, loses one-fifth.

To measure round timber take the girth in inches at both large and small ends, add them, divide by 2, which gives the mean girth; then multiply the length in feet by the square of one-fourth of the mean girth and the quotient will be the contents of cubic feet. This rule is commonly adopted, and gives four-fifths of the true contents, one-fifth being allowed to the purchaser for waste in sawing.

To measure inch boards, multiply the length in feet by the width in inches, and divide the product by 12. The quotient will be the contents in feet. For lumber 1¼ inches thick, add ¼ to the quotient. If 1½ inches thick, add ½. If 1¾ inches thick, add ¾. If 2 inches thick, divide by 6 instead of by 12. If 2¼ inches thick, add ¼ to the quotient and so on. If 3 inches thick, divide by 4. If 4 inches thick, divide by 3. If 6 inches thick, divide by 2.

Covering Capacity of Shingles

Average size of shingles — 4 x 16 inches — is taken as a basis of calculation.

100 sq. ft. will require laid 4 inches to the weather 900
100 sq. ft. will require laid 4½ inches to the weather 800
100 sq. ft. will require laid 5 inches to the weather 720

Three and one-half pounds of four-penny nails are required for laying 1,000 shingles.

5 to 10 per cent should be added to these figures for waste and shortage.

Stone and Brick Walls

A perch of stone is 24.75 cubic feet. When built in the wall, 2¾ cubic feet are allowed for the mortar and filling; hence, 22 cubic feet of stone make one perch of wall.

Masons estimate 3 pecks of lime and 4 bushels of sand to a perch of wall.

To find the number of perches of stone in a wall, multiply together the length, height, and thickness in feet, and divide by 22.

Common bricks are 7¾ to 8 inches long by 4¼ inches wide and 2½ inches thick. Front bricks are ¼ inch longer and wider.

It requires 20 common bricks to lay one cubic foot. In an 8-inch wall 15 common bricks make one foot of wall.

To find the number of bricks in a wall, 12 inches or more in thickness, multiply together the length, height and thickness in feet, and that again by 20. For an 8-inch wall, multiply the length by the height, and that by 15, and the product will be the number of bricks in the wall. If the wall is perforated by openings, such as doors, windows, etc., multiply the length of such openings by the width, and that by the thickness, and deduct from the cubic contents of the wall before multiplying by 15 or 20 as above

Labor for laying common brick will cost $3 to $4 per thousand Material and labor for laying common brick will cost from $10 to $15 per thousand.

Labor for laying pressed brick will cost from $12 to $14 per thousand.

Labor and material for laying pressed brick will cost from $32 to $40 per thousand.

One and one-eighth barrels of lime and ⅝ yard of sand will lay 1,000 common brick

One mason and helpers (at the rate of 1¼ helpers to each mason) will lay in one day of ten hours 1,800 to 2,000 common brick.

Chimneys cost 90 cents per foot for an 8-inch flue to $1.20 per foot for a 12-inch flue.

Stone foundation walls for elevators, etc., should not be less than 16 inches thick. A thinner wall does not bond together well. All foundation walls should be at least 8 inches thicker than that portion of the wall above grade.

Do not use more mortar than necessary, as it is obvious that stone is the stronger of the two materials. Do not lay the stone vertically, but on its natural quarry bed. Otherwise, water will easily penetrate between the layers. For all damp places, cement mortar, or lime and cement mortar should be used.

How to Waterproof Walls. Allow no earth to be placed against the wall, but fill space of from 12 to 18 inches next to the wall with broken stone or gravel, after an open-jointed tile drain has been laid at the bottom. The outside of the walls and footing should be plastered thickly with cement mortar, one part sand and one part cement. As an additional safeguard, it would be well to add a coat of asphalt or coal tar. This, however, must be done only when the walls are absolutely dry.

How and When to Spray

Plant	First Application	Second Application	Third Application	Fourth Application	Fifth Application
Apple — (Cankerworm, codling moth, bud moth, scab).	Spray before buds start, using copper sulphate solution.	After the blossoms have formed, but before they open, Bordeaux and Paris green *	Within a week after blossoms have fallen. Bordeaux and Paris green.	10 to 14 days later, repeat.	10 to 14 days later, Bordeaux, or weak copper sulphate.
Bean — (Anthracnose).	When blossoms appear, spray with Bordeaux.	10 days later, repeat.	10 to 14 days later, weak copper sulphate solution.	Repeat last if necessary.	
Cabbage — (Worms aphis).	When worms first appear, kerosene emulsion, or Paris green.	If worms or aphides are present, repeat if plants are not heading, using emulsion for aphis.	If aphides persist, or if worms reappear, use kerosene emulsion, if plants are not heading.	After heads form, use saltpetre for worms, a teaspoonful to a gallon of water, emulsion for aphides	Repeat, if necessary.
Carnation—(Rust and other fungous diseases).	When planted out, dip in Bordeaux.	7 to 12 days later, spray plants with Bordeaux.	Repeat at intervals of a week or ten days until blossoms open.	While in bloom, spray every week with the dilute copper sulphate solution	
Cherry — (Rot, aphis, curculio and slug).	Before buds start, use copper sulphate solution. For aphis, kerosene emulsion.	When fruit has set. Bordeaux and Paris green.*	10 to 12 days later, if signs of rot appear, repeat.	10 to 12 days later, copper sulphate solution, weak.	Repeat, if necessary.
Currant — (Worms, mildew).	As soon as worms are seen, Paris green.	If they reappear, repeat adding Bordeaux for mildew †	If worms still trouble, pyrethrum or hellebore †		
Gooseberry — (Mildew, worms).	As leaves open. Bordeaux and Paris green	In 10 to 14 days, repeat with both.	10 to 14 days later, sulphide of potassium on English varieties.	10 to 14 days later, repeat if necessary.	If mildew persists after crop is gathered, Bordeaux
Grape — (Flea-beetle, fungous diseases).	Before buds burst copper sulphate solution and Paris green	When first leaves are half grown, Bordeaux and Paris green	As soon as fruit has set, repeat.	10 to 14 days later, Bordeaux mixture, if disease is present.	If necessary, very weak copper sulphate solution
Nursery Stock—(Fungous diseases).	When buds burst. Bordeaux.	Repeat at intervals of 10 to 14 days.	Repeat at intervals of 10 to 14 days.		
Peach, Apricot—(Leaf-curl, curculio, mildew, and rot).	Before buds swell, copper sulphate solution.	As soon as fruit has set, Bordeaux and Paris green.*	10 to 12 days later, repeat.	10 to 12 days later, repeat.	If rot persists, use very weak copper sulphate solution every 5 to 7 days †
Pear — (Leaf blight, scab, psylla, and codling moth).	Before buds start, copper sulphate solution	Within a week after blossoms fall, Bordeaux and Paris green	10 to 12 days later, repeat.	15 to 16 days later, Bordeaux.	15 to 16 days later, Bordeaux †
Plum — (Black knot, rot and all fungous diseases, curculio).	As buds start, copper sulphate solution. Cut out knot and burn	When fruit has set, Bordeaux and Paris green	10 to 12 days later, repeat.	15 to 20 days later, Bordeaux.	Weak copper sulphate solution, as is necessary.

How and When to Spray—Continued

Plant	First Application	Second Application	Third Application	Fourth Application	Fifth Application
Potato—(Beetles, scab, blight).	For scab, soak seed in corrosive sublimate solution (2 oz. in 16 gallons of water for 90 minutes).	When beetles or their larvae appear, Paris green (1 pound to 100 pounds of plaster).	Repeat whenever necessary.	When blight of the leaves is accompanied by rot of the tubers, Bordeaux.	Repeat, if necessary.
Quince — (Leaf and fruit spot, rot).	Before buds start, copper sulphate solution.	When fruit has set, Bordeaux and Paris green.*	10 to 12 days later, repeat.	10 to 20 days later, Bordeaux.	Bordeaux or copper sulphate solution, as necessary.
Raspberry, Blackberry —(Anthracnose, rust).	Cut out badly diseased canes. Spray with copper sulphate solution before growth starts.	When new canes are one foot high, spray with Bordeaux mixture.	10 to 14 days later, weak copper sulphate solution.	When crop is gathered, remove old canes, thin new ones and spray with Bordeaux mixture.	**Special Notes** For Black Knot on cherries and plums, cut out and destroy by burning the diseased parts as soon as discovered. For Aphis on all plants use kerosene emulsion. If Red Rust appears the entire stools affected should be cut out and burned. Young Plants should be sprayed with Bordeaux mixture at the time of the first and third applications to bearing plants.
Rose—(Mildew, black spot, red spider, aphis).	Mildew: Keep heating pipes painted with equal parts lime and sulphur mixed with water to a paste.	Black spot: Spray plants once a week with weak copper sulphate.	Red Spider: Kerosene emulsion to under side of foliage.	Aphis: Kerosene emulsion.	
Strawberry—(Rust).	Just before blossoms open. Bordeaux and Paris green.	When fruit has set, Bordeaux* or weak copper sulphate solution.	As soon as berries are harvested, Bordeaux (if plants are to be kept longer).		
Tomato — (Rot and blight, worms).	When first fruits have set, Bordeaux.	If disease appears, repeat* or use weak copper sulphate solution.	If necessary, spray with weak copper sulphate solution.		
Violet — (Blight, red spider).	When blight is first seen, weak copper sulphate. Kerosene emulsion for insects.	Repeat at intervals of 10 to 20 days, as necessary for blight.	Note.—Use kerosene emulsion, very weak.		

Explanation.—Whenever an asterisk (*) is used it cautions against spraying with poisons while the plants are in blossom; a dagger (†) indicates that there is danger of making an application within three weeks of the time the fruit is to be used as food. While the number of applications recommended will be found desirable, in seasons when the fungi are less troublesome a smaller number may often suffice.

FUNGICIDES

Copper Sulphate Solution

Copper sulphate ..... 1 lb. Water ..... 25 gal.

For use only before the buds open. It is ready for use as soon as dissolved in water.

Bordeaux Mixture

Copper sulphate ..... 4 lbs. Quick lime ..... 4 lbs.
Paris green (for leaf-eating insects) ..... 4 oz. Water (1 barrel) ..... 40-50 gal.

To prevent potato rot, 6 lbs. of copper sulphate is used instead of 4.

Ammoniacal Copper Carbonate

Water (1 barrel) ..... 40-50 gals.

For use late in the season when Bordeaux mixture may stain the fruit. It is also best adapted for greenhouse spraying.

INSECTICIDES

Kerosene Emulsion

Kerosene (coal oil) ..... 2 gals. Rain water ..... 1 gal.
Soap ..... ½ lb.

To be diluted before use with 9 parts of water. For sucking insects.

Paris Green and Water

Paris green ..... 1 lb. Lime (fresh) ..... 1 lb.

Spraying in a Missouri Orchard

I H C Spraying Outfits

I H C Spraying Outfits include 1 and 2-horse power outfits, air cooled and water cooled. These outfits are very practical. The engine, when not used to operate the spraying pump, can be easily disconnected and used for general farm purposes. Our special spraying catalogue contains more complete information on when and how to spray.

Renting a Farm

The greatest risk is always on the landlord's side in the rental of property. He is putting his property into the possession and care of another, who may be a person of doubtful responsibility. It is well to observe these rules and cautions:

Do not trust to a verbal lease—let it be in writing, signed and sealed. Its stipulations then become commands and can be enforced. Let it be signed in duplicate, so that each party may have an original.

Be careful in selecting your tenant. There is more in the man than there is in the bond.

Insert such covenants as to repairs, manner of use, and in restraint of waste as the circumstances call for. As to particular stipulations, examine leases drawn by those who have had long experience in renting farms, and adopt such as meet your case.

There should be covenants against assigning and underletting.

If the tenant is of doubtful responsibility, make the rent payable in installments. A covenant that the crops shall remain the lessor's till the lessee's contracts with him have been fulfilled is valid against the lessee's creditors. In the ordinary case of renting farms on shares the courts will treat the crops as the joint property of lord and tenant, and thus protect the former's rights.

Every lease should contain stipulations for forfeiture and re-entry in case of non-payment or breach of any covenants.

Interest and Statute of Limitations

State	Interest		Limitations		
	Legal rate	By contract	Judgments	Notes	Accounts
	P.ct	P. ct.	Yrs.	Yrs.	Yrs.
Alabama	8	8	20	*6	3
Arkansas	6	10	10	5	3
Arizona	6	Any	5	4	3
California	7	Any	5	4	2
Colorado	8	Any	20	6	6
Connecticut	6	6	†	‡	6
Delaware	6	6	—	6	3
Dist. of Col.	6	10	12	3	3
Florida	8	10	20	5	2
Georgia	7	8	7	6	4
Idaho	7	12	6	5	4
Illinois	5	7	20	10	5
Indian Ter.	6	10	.	. . .	.
Indiana	6	8	¶10	10	6
Iowa	6	8	20	10	5
Kansas	6	10	5	5	3
Kentucky	6	6	15	15	*5
Louisiana	5	8	10	5	3
Maine	6	Any	20	††6	6
Maryland	6	6	12	3	3
Massachusetts	6	Any	20	6	6
Michigan	5	7	6	6	6
Minnesota	7	10	10	6	6
Mississippi	6	10	7	6	3
Missouri	6	8	10	10	5
Montana	8	Any	10	8	3
Nebraska	7	10	5	5	4
Nevada	7	Any	6	6	4
N. Hampshire	6	6	20	6	6
New Jersey	6	6	20	6	6
New Mexico	6	12	7	6	4
New York	6	6	20	6	6
NorthCarolina	6	6	10	*3	3
North Dakota	7	12	10	6	6
Ohio	6	8	5	15	6
Oklahoma	7	12	1	5	3
Oregon	6	10	10	6	6
Pennsylvania	6	6	5	6	6
Rhode Island	6	Any	20	6	6
SouthCarolina	7	8	10	6	6
South Dakota	7	12	10	6	6
Tennessee	6	6	10	6	6
Texas	6	10	10	4	2
Utah	8	Any	8	6	4
Vermont	6	6	8	‡‡6	6
Virginia	6	6	20	5	2
Washington	6	12	6	6	3
West Virginia	6	6	10	10	3
Wisconsin	6	10	20	6	6
Wyoming	8	12	5	5	8

*Under seal 10. †No law. ‡Negotiable notes 6; non-negotiable 17. ¶Varies by counties. ¶Real estate 20. ††Under seal 12. ‡‡Under seal 14.

Days of grace on notes and drafts are given in the following states and territories: Alabama, Arkansas, South Dakota, Georgia, Indian Territory, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Mexico, North Carolina, Oklahoma, South Carolina, Texas, and Wyoming.

Homestead Laws

Any person who is the head of a family, or who is 21 years old and is a citizen of the United States or has filed his declaration of intention to become such, and who is not the proprietor of more than 160 acres of land in any state or territory, is entitled to enter one-quarter section (160 acres) or less quantity of unappropriated public land under the homestead laws. The applicant must make affidavit that he is entitled to the privileges of the homestead act and that the entry is made for his exclusive use and for actual settlement and cultivation, and must pay the legal fee and that part of the commission required, as follows: Fee for 160 acres, $10; commission, $4 to $12. Fee for eighty acres, $5; commission, $2 to $6. Within six months from the date of entry the settler must take up his residence upon the land and cultivate the same for five years continuously. At the expiration of this period, or within two years thereafter, proof of residence and cultivation must be established by four witnesses. The proof of settlement, with the certificate of the register of the land office, is forwarded to the general land office at Washington, from which a patent is issued. Final proof cannot be made until the expiration of five years from date of entry, and must be made within seven years. The government recognizes no sale of a homestead claim. After the expiration of fourteen months from date of entry the law allows the homesteader to secure title to the tract, if so desired, by paying for it in cash and making proof of settlement, residence, and cultivation for that period.

The law allows only one homestead privilege to any one person.

Simple Interest Table

NOTE.—To find the amount of interest at $2\frac{1}{2}$ per cent on any given sum, divide the amount given for the same sum in the table at 5 per cent by 2; at $3\frac{1}{2}$ per cent divide the amount at 7 per cent by 2, etc.

Amt	Interest	1 day	2 days	3 days	4 days	5 days	6 days	7 days	8 days	9 days	10 days	20 days	1 mo	2 mos.	3 mos.	4 mos.	5 mos.	6 mos.	1 year
	3																	1	3
	4														1	1	1	2	4
$1	5													1	1	2	2	3	5
	6												1	1	1	2	2	3	6
	7												1	1	1	2	3	4	7
	3													1	1	2	2	3	6
	4												1	1	2	2	3	4	8
$2	5												1	1	2	3	3	4	5	10
	6												1	1	2	3	4	5	6	12
	7												1	1	2	4	5	6	7	14
	3												1	1	2	3	4	5	9	
	4											1	1	2	3	4	5	6	12	
$3	5											1	1	3	4	5	6	8	15	
	6										1	1	2	3	5	6	8	9	18	
	7									1	1	1	2	4	5	7	9	11	21	
	3											1	1	2	3	4	5	6	12	
	4										1	1	2	4	5	6	8	10	16	
$4	5									1	1	1	2	3	5	7	8	10	20	
	6								1	1	1	1	2	4	6	8	10	12	24	
	7							1	1	1	1	2	2	5	7	9	12	14	28	
	3										1	1	2	2	4	5	7	8	15	
	4									1	1	1	2	3	5	6	8	10	20	
$5	5								1	1	1	2	2	4	6	8	10	13	25	
	6							1	1	1	1	2	3	5	8	10	13	15	30	
	7						1	1	1	1	1	2	3	6	9	12	15	18	35	
	3									1	1	1	2	5	7	10	12	15	30	
	4							1	1	1	1	2	3	6	10	13	16	20	40	
$10	5						1	1	1	1	2	2	3	8	13	17	21	25	50	
	6					1	1	1	1	2	2	2	3	5	15	20	25	30	60	
	7					1	1	1	1	2	2	2	4	6	12	18	23	29	35	70
	3				1	1	1	1	1	2	2	4	6	12	19	25	31	38	75	
	4				1	1	2	2	2	3	5	8	10	25	33	41	50	1.00		
$25	5			1	1	2	2	2	3	3	3	7	13	31	42	52	63	1.25		
	6			1	1	2	2	3	3	3	4	8	15	38	50	63	75	1.50		
	7			1	1	2	2	3	3	4	4	9	18	44	58	73	88	1.75		
	3			1	1	1	2	2	3	3	4	4	8	13	25	37	50	62	75	1.50
	4			1	1	2	2	3	4	4	5	6	11	16	33	50	67	83	1.00	2.00
$50	5		1	1	2	2	3	4	5	5	6	7	14	21	42	63	83	1.04	1.25	2.50
	6		1	2	2	3	4	5	6	7	8	8	17	25	50	75	1.00	1.25	1.50	3.00
	7		1	2	3	3	4	5	6	7	8	9	19	29	58	88	1.17	1.46	1.75	3.50
	3		1	1	2	3	4	5	6	6	7	8	16	25	50	75	1.00	1.25	1.50	3.00
	4		1	2	3	4	6	6	8	9	12	11	22	33	66	1.00	1.33	1.67	2.00	4.00
$100	5		1	3	4	6	7	8	10	11	13	14	28	42	83	1.25	1.67	2.08	2.50	5.00
	6		2	3	5	7	8	10	12	13	15	17	33	50	1.00	1.50	2.00	2.50	3.00	6.00
	7		2	4	6	8	10	12	14	16	18	19	38	58	1.17	1.75	2.33	2.92	3.50	7.00

Compound Interest on One Dollar

Years	Rate per cent 3	4	5	6	7
1	1.03	1.04	1.05	1.06	1.07
$1\frac{1}{2}$	1.04	1.06	1.07	1.09	1.10
2	1.06	1.08	1.10	1.12	1.14
$2\frac{1}{2}$	1.07	1.10	1.13	1.15	1.18
3	1.09	1.12	1.15	1.19	1.22
$3\frac{1}{2}$	1.10	1.14	1.18	1.22	1.27
4	1.12	1.17	1.21	1.26	1.31
$4\frac{1}{2}$	1.14	1.19	1.24	1.30	1.36
5	1.16	1.21	1.28	1.34	1.41
$5\frac{1}{2}$	1.17	1.24	1.31	1.38	1.45
6	1.19	1.26	1.34	1.42	1.51
$6\frac{1}{2}$	1.21	1.29	1.37	1.46	1.56
7	1.23	1.31	1.41	1.51	1.61
$7\frac{1}{2}$	1.24	1.34	1.44	1.55	1.67
8	1.26	1.37	1.48	1.60	1.73
$8\frac{1}{2}$	1.28	1.30	1.52	1.65	1.71

Years	Rate per cent 3	4	5	6	7
9	1.30	1.42	1.55	1.70	1.85
$9\frac{1}{2}$	1.32	1.45	1.59	1.75	1.92
10	1.34	1.48	1.63	1.80	1.98
100	10.25	50.50	131.50	339.00	868.00

WHEN MONEY DOUBLES AT INTEREST

Rate	Interest Simple Years	Interest Comp'd Years	Rate	Interest Simple Years	Interest Comp'd Years
1	100.00	69.66	$4\frac{1}{2}$	22.22	15.75
$1\frac{1}{2}$	66.66	46.56	5	20.00	14.21
2	50.00	35.00	$5\frac{1}{2}$	18.18	12.94
$2\frac{1}{2}$	40.00	28.07	6	16.67	11.90
3	33.33	23.45	$6\frac{1}{2}$	15.38	11.00
$3\frac{1}{2}$	28.57	20.15	7	14.29	10.24
4	25.00	17.07	$7\frac{1}{2}$	13.33	0.58

Customary Doses of Drugs for Farm Animals

In the list of doses, oz. stands for ounce, pt. for pint, lb. for pound, gr. for grain, dr. for dram, dp. for drop.

Name of Drug	Cattle	Sheep	Horses	Hogs	Dogs
Acetanilid	2 dr.	.5–1 dr.	1–2 dr	.5–1 dr.	3–7 gr.
Aconite Tincture	20–30 dp.	10 dp.	10–30 dp.	5 dp.	1–3 dp.
Alcohol (see Brandy)					
Alum	3–4 dr.	40 gr.	2–4 dr.	40 gr.	15 gr.
Ammonia Water	1 oz.	2 dr.	.5 oz	1 dr.	.5 dr.
Ammonia Aromatic	2 oz.	1–2 dr.	1–2 oz.	1–2 dr.	20–60 dp.
Aniseed	1 5 oz.	1–2 dr.	1 oz.	1 dr.	15 gr.
Arnica Tincture	1 oz.	2 dr.	.5–1 oz.	1 dr.	7–20 dp.
Arsenic	5 dr.	5–20 dp.	2–4 dr.	5–20 dp.	1–5 dp.
Asafetida Tincture	3 oz.	.5 oz	2 oz.	2 dr.	1 dr.
Atropine	1–2 gr.	1–15 gr.	1 gr.	1–15 gr.	1–40 gr.
Belladonna Fluid Extract	1 dr.	20 dp.	.5 dr.	3 dp.	1 dp.
Boracic Acid	3 dr.	20 gr.	1–3 dr.	15 gr.	8 gr.
Brandy	4 oz.	1–2 oz.	2–4 oz.	1–2 oz.	1–4 dr.
Calcium Phosphate	1 oz	1–2 dr.	2–4 dr.	1–2 dr.	5–20 gr.
Calomel	1–2 dr.	5–20 gr.	1 dr.	5–20 gr.	1 gr.
Camphor Spirit	1 oz.	2 dr.	2–4 dr.	15 dp.	10 dp.
Cantharides	5–20 gr.	4–8 gr.	5–20 gr.	4–8 gr.	1–2 gr.
Carbolic Acid	1–2 dr.	10–20 dp.	.5–2 dr.	5–15 dp.	3–8 dp.
Castor Oil	1 pt.	2–4 oz.	1 pt.	2–4 oz.	1–2 dr.
Chalk	2 oz.	1–2 dr.	.5–2 oz.	1 dr.	5–1 dr.
Charcoal	1–2 oz.	2–4 dr.	1–2 oz.	2–4 dr.	20–60 gr.
Chloral Hydrate	1–2 oz.	1–2 dr.	1–2 oz.	1–2 dr.	5–20 gr.
Chloroform	1–2 dr.	25 dp.	1–2 dr.	20 dp.	10 dp.
Cocaine	10 gr.		5–10 gr.		⅛ gr.
Cod Liver Oil	3–8 oz.	3–8 dr.	2–6 oz.	2–6 dr.	1–3 dr.
Copperas	2 dr.	20 gr.	1 dr.	10 gr.	
Copper Sulphate	2–4 dr.	20–30 gr.	2–4 dr.	20–30 gr.	1–2 gr.
Digitalis	10–60 gr.	5–15 gr.	10–50 gr.	3–10 gr.	2 gr.
Epsom Salts	1 lb.	1–4 oz.	.5–1 lb.	1 oz.	1–4 dr.
Ergot	.5–1 oz.	1–2 dr.	.5–1 oz.	1–2 dr.	1 dr.
Ether	1 oz.	2–4 dr.	.5–1 oz.	2–4 dr.	25 dp.
Fowler's Solution (see Arsenic)					
Gentian	8 dr.	1–2 dr.	4–8 dr.	1–2 dr.	40 gr.
Ginger	5–8 dr.	1–2 dr.	2–8 dr.	15–60 gr.	5–20 gr.
Glauber Salts	1–1.5 lb.	1–4 dr.	.5–1 lb.		
Glycerine	3–5 oz.	5 dr.	2–5 oz.	4 dr.	1 dr.
Hydrochloric Acid	2–3 dr.	11–30 dp.	1–3 dr.	10–20 dp.	5 dp.
Iodide of Potash	1–2 dr.	10–25 gr.	.5–2 dr.	5–20 gr.	2–8 gr.
Ipecac	2–4 dr.	1 dr.	1–2 dr.		1–2 gr.
Iron Sulphate	2 dr.	25 gr.	1–2 dr.	25 gr.	4 gr.
Jamaica Ginger	2 oz.	.5 oz.	1 oz.		
Laudanum	2–5 oz.	1–4 dr.	1–4 oz.	1–2 dr.	20 dp.
Lead Acetate	1 dr.	25 gr.	1 dr.	20 gr.	1–2 gr.
Lime Water	4–6 oz.	2 oz.	4–6 oz.		1–8 dr.
Linseed Oil	1–2 pt.	6–12 oz.	.5–1 pt.	5–10 oz.	1 oz.
Morphine	5–10 gr.	1–2 gr.	3–10 gr.	¼–½ gr.	⅛–¼ gr.
Mustard	1 oz.	1–2 dr.	.5–1 oz.	1–2 dr.	20 gr.
Nitre	3–8 oz.	1 dr.	1–2 oz.	1 dr.	5–20 gr.
Nux Vomica	2 dr.	30–40 gr.	1–2 dr.	10–20 gr.	1–2 gr.
Olive Oil	1–2 pt.		1–2 pt.		2–4 oz.
Opium (powdered)	2 dr.	6–25 gr.	1–2 dr.	5–20 gr.	1–3 gr.
Pepper	2–4 dr.	15–25 gr.	1–3 dr.	10–20 gr.	4–10 gr.
Peppermint Oil	30 dp.		15–30 dp.		1–5 dp.
Potassium Bromide	2 oz.	2–4 dr.	1–2 oz.	2–4 dr.	5–50 gr.
Quinine	1 dr.	5–10 gr.	15–60 gr.	5–10 gr.	1–2 gr.
Rhubarb	1–2 oz.	1 dr.	1–2 oz.	1 dr.	5–10 gr.
Saltpetre (see Nitre)					
Soda	2 oz.	.5 oz.	1 oz.	2 dr.	20–50 gr.
Spanish Flies (see Cantharides)					
Strychnine	2–3 gr.	¼–1 gr.	.5–2 gr.		
Subnitrate of Bismuth	2 dr	10–30 gr.	1–2 dr.	5–20 gr.	3–10 gr.
Sulphur	3–4 oz.	1–2 oz.	2–4 oz.	1–2 oz.	1–4 dr.
Turpentine	2 oz	1–4 dr.	1–2 oz.	1 dr.	20–50 dp.

Incubation and Gestation Tables

Chickens	20–22 days	Guinea fowls	28 days
Geese	28–34 days	Pheasants	25 days
Ducks	28 days	Ostriches	40–42 days
Turkeys	27–29 days		

The period of gestation in animals varies considerably, but the following is an average period based on a long series of observations:

Elephant	2 years	Goat	5 months
Camel	11–12 months	Pig	3½ months
Ass	12 months	Bitch	9 weeks
Mare	11 months	Cat	8 weeks
Cow	9 months	Rabbit	30 days
Sheep	5 months	Guinea pig	65 days

Advantages of Feeding Ground Grain

Prof. W. J. Kennedy of the Iowa State College, in an article in the Farmer's Tribune on the subject of grinding feed for live stock, says:

"A careful study of the experiments conducted by the various experiment stations, and under a variety of conditions with different classes of stock, has invariably shown that it requires less ground grain to produce a given amount of milk, meat, or work than it does when whole or unground grain is used. In some instances the difference is as high as 35 per cent.

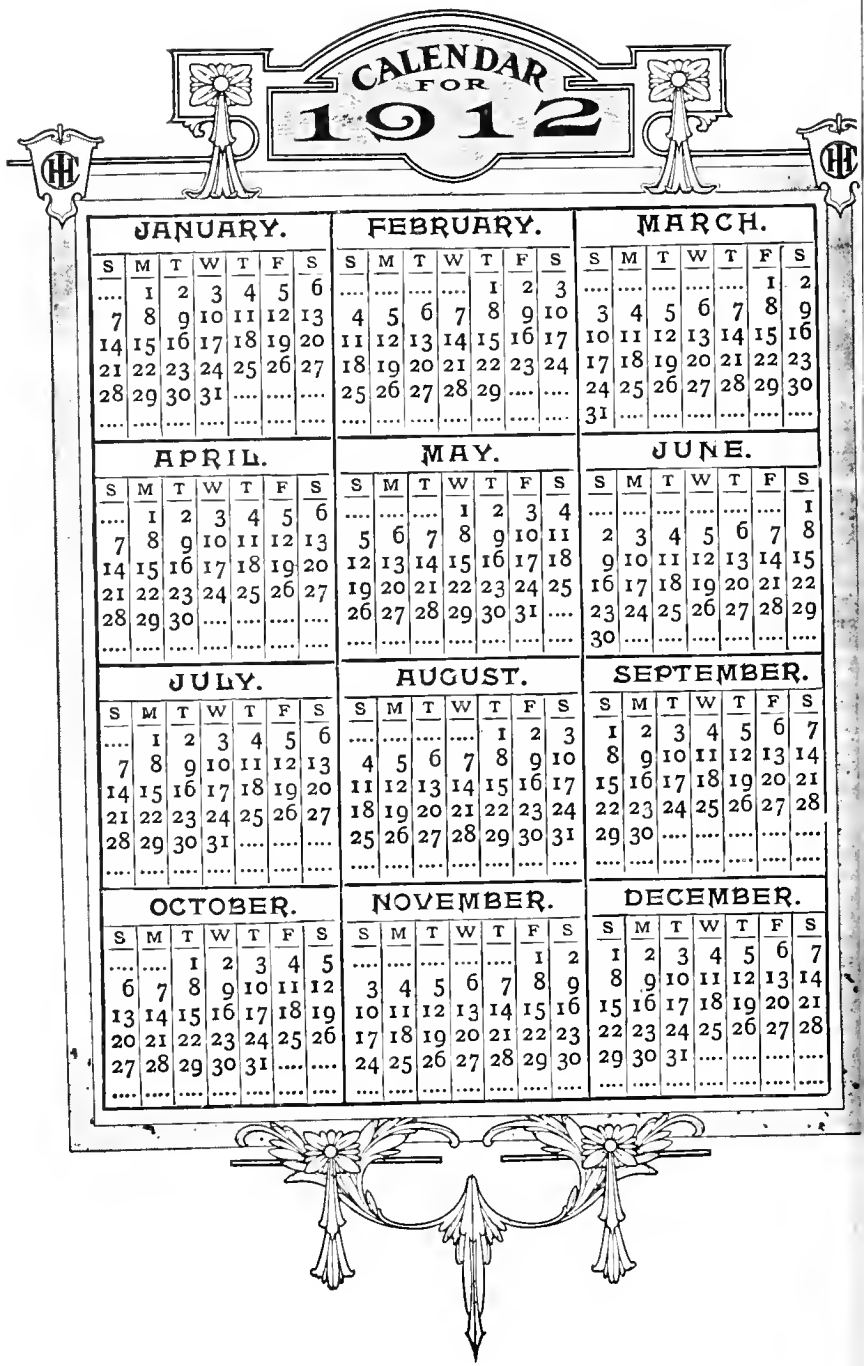
Use an International grinder. The International feed grinder is built in two styles. One style is designed especially for grinding corn on the cob; however, it will also grind wheat, barley, oats, Kafir corn, etc. This mill is built in two sizes—with 8-inch and with 10-inch grinding plates. The other style is designed for grinding small grain only, and is built in one size with 8-inch grinding plates.

IHC
Feed Grinder

Dehorning Calves

Taking horns off yearling or older cattle is a hard shock to them. It costs a week's feed, and may cost much more. It is very easy to prevent the horns starting, requiring only thoughtful attention for a few minutes before the horns have come through the skin.

The following recipe has never failed: Procure common powdered concentrated lye, such as all housewives use. A 10-cent can will dehorn 100 calves. When the calf is a week or more old, before the horn has come through the skin, and when you can feel it in the shape of a little button under the skin, take the calf in hand. Lay him gently on his side. Spit on the little bump and rub it in with your finger, till a place is wet as big as a silver quarter of a dollar. Don't wet anywhere else. Take your knife and lift out dry the powdered lye, as much as two grains of corn. Press it down on the wet place. It will stick there. Treat the other side in the same manner. Let the calf go. It won't hurt him much, or long. A scab forms; do not touch it. It will peel off after a time, and the hair will grow over the place, you will have a fine smooth head, equal to a natural polled head.



JANUARY.

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JULY.

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AUGUST.

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SEPTEMBER.

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OCTOBER.

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NOVEMBER.

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DECEMBER.

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29	30	31	....	....	....	....
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Do You Want to Keep Posted?

Then fill in the information requested in this sheet, tear it out along the dotted lines and mail to us promptly. We will keep your name on our mailing list and send you, free of charge, new reading matter which we issue from time to time, relating to agriculture and to new farm machines which will enable you to farm with less expense — less work.

THIS PLACES YOU UNDER NO OBLIGATION

Name .....R.F.D.....
P. O. ..... State.....
How many acres do you farm?.....
How much stock do you keep?.....
.....Horses.....Hogs .....Sheep
.....Cattle, of which.....are Milch Cows.

Do you use a Gasoline Engine? .....
Manure Spreader? .....
Cream Separator? .....
Hay Press? .....
Feed Grinder? .....
Gasoline Tractor? .....
Auto Wagon? .....

Indicate by a check mark (thus √) the literature you would like to receive

Check Here		Check Here	
.....	Gasoline engine literature		Header binder literature
...	Gasoline traction engine literature		Header literature
....		.....	Thresher literature
.....	Gasoline spraying engine literature	....	Mower literature
....			Rake literature
....	Cream separator literature		Sweep rake literature
.	Manure spreader literature	.....	Hay stacker literature
.....		.....	Side delivery rake literature
	Hay press literature	..	
.....	Feed grinder literature	....	Tedder literature
.....	Wagon literature	....	Hay loader literature
.....	Disk harrow literature	...	Corn binder literature
.....	Peg tooth harrow literature	.....	Shredder literature
.....		....	Corn picker literature
...	Spring tooth harrow literature	...	Corn sheller literature
.....		.	Auto wagon literature
.....	Cultivator literature		Thrift Land Booklet
.	Binder literature		.....

International Harvester Company of America
(Incorporated)
Chicago U S A

We here renew the invitation to farmers, and all others interested in the farm, to make free use of the I H C Service Bureau. Let it help you solve some of your crop, dairy, fruit, and stock problems. When you have a question that needs an answer, send it along to the Bureau, which is in the Harvester Building, Chicago, and when you have an answer that may fit some fellow's question, send that along too.

We are all working toward the same end — bigger and better crops — so we had just as well work together. The Bureau has gathered a lot of valuable information — it is still gathering — and we employ some agriculturists who are coöperating with other agriculturists. The service is accurate, and is worth using liberally.

To help in the work we would like to have you check in the information asked in the table below:

I already have in use machines I have checked √ to left of article			
Check Here		Check Here	
	Gasoline engine	....	Header
	Traction engine	.....	Thresher
...	Cream separator	.....	Mower (old) (new)
...	Manure spreader	.....	Rakes (old) (new)
	Hay press	.....	Sweep rakes
	Feed grinder	.....	Hay stackers
.	Wagons (old) (new)	....	Side del. rakes
.	Farm trucks	....	Tedder
..	Disk harrow	.....	Hay loader
..	Peg tooth harrow	.....	Corn binder
	Spring tooth harrow	.....	Shredder
	Cultivator	.....	Corn picker
.	Binder (old)(new)	..	Corn sheller
.....	Header binder	..	Auto wagon
	... .	.	.. ..

FILL IN NAME OF YOUR IMPLEMENT DEALER:

Name .....

Town .... State .....

The I H C Line includes:

CHAMPION · DEERING · McCORMICK
MILWAUKEE · OSBORNE · PLANO
HARVESTING & HAYING MACHINES & TOOLS
TILLAGE IMPLEMENTS
KEYSTONE SHELLERS, HAY LOADERS, RAKES
GASOLINE ENGINES, HAY PRESSES,
FEED GRINDERS, AUTO BUGGIES,
AUTO WAGONS AND ROADSTERS,
DAIRY MAID AND BLUEBELL CREAM
HARVESTERS, CORN KING, CLOVERLEAF
& KEMP 20TH CENTURY MANURE SPREADERS,
WEBER, COLUMBUS, NEW BETTENDORF
& STEEL KING WAGONS, BUCKEYE
& STERLING FARM TRUCKS,
THRESHERS, BINDER TWINE